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MARKET ORIENTATION, JOB SATISFACTION, PRODUCT QUALITY, AND FIRM PERFORMANCE: EVIDENCE FROM CHINA

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This article examines the processes by which market orientation (MO) affects performance using a cross-level approach. The results of a survey of 2,754 employees from 180 firms in China show that organization-level MO culture leads to unit-level MO behavior, which improves employee-level job satisfaction and then product quality, which in turn fosters organizational performance. In particular, MO behavior fully mediates the effects of MO culture on employee satisfaction, product quality, and organizational performance. Leadership quality strengthens the effect of MO culture on unit-level MO behavior. Moreover, MO behavior enhances firm performance indirectly through employee job satisfaction and product quality. Copyright © 2008 John Wiley & Sons, Ltd.

INTRODUCTION

Many studies strongly advocate that firms adopt a market orientation (MO) to achieve competitive advantage. At its core, MO places the highest priority on the profitable creation and maintenance of superior customer value, and thus endorses the classic tenet of staying close to the customer (Slater and Narver, 1998). Empirical evidence also indicates that MO enhances firm performance (e.g., Hult and Ketchen, 2001; Kirca, Jayachandran, and Bearden, 2005; Zhou, Yim, and Tse, 2005). Despite the strong appeal of MO, a series of debates has appeared in the *Strategic Management Journal* centering around how MO contributes to performance (for a brief review, see Hult, Ketchen, and Slater, 2005; most recently, see Connor, 2007; Ketchen, Hult, and Slater, 2007). As Hult *et al*. (2005: 1173) posit, simply assessing the direct link between MO and performance is not fruitful; rather, the key question must be what are the *processes* by which MO affects performance?

In their meta-analysis of received literature, Kirca *et al*. (2005) identify innovativeness and customer-related outcomes such as customer loyalty, as the most researched process variables. Less examined, however, are the processes *internal* to organizations through which MO enhances

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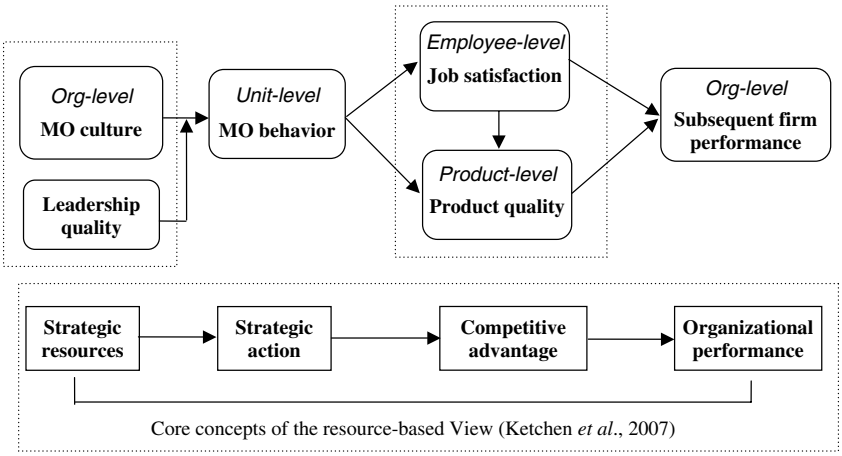

Figure 1. A cross-level model of MO, employee satisfaction, product quality, and firm performance

performance. As Gebhardt, Carpenter, and Sherry (2006) point out, the lack of research on internal processes seriously limits understanding and implementation of MO. In particular, Kirca *et al*. (2005) emphasize that further research should uncover employee-related variables such as *employee satisfaction* as internal process factors. Most recently, Ketchen *et al*. (2007) indicate that competitive advantage represents an important, yet missing, component in existing MO research, which augments the need to consider competitive advantage indicators such as *product quality* in additional research.

Another limitation of extant research on MO is that it has largely diverged according to a cultural versus intelligence approach (Hult *et al*., 2005). The *cultural* approach views MO as an aspect of corporate culture that prioritizes the creation and maintenance of superior customer value (Narver and Slater, 1990), whereas the *intelligence* approach is action oriented and views MO as the generation of, dissemination of, and response to customer intelligence (Kohli and Jaworski, 1990). Although both cultural and intelligence approaches are highly influential, extant research has not integrated them into a more coherent MO framework, with the exceptions of recent efforts by Homburg and Pflesser (2000) and Hult *et al*. (2005).

To fill these research gaps, we propose a cross-level framework (see Figure 1) that integrates the cultural and intelligence approaches and examines how MO contributes to performance through a cross-level process. Building on the resource-based view (RBV), we conceptualize MO as consisting of both cultural and behavioral elements and examine how organization-level MO culture affects unit-level MO behavior. We also consider the role of leadership quality in facilitating MO implementation. Furthermore, we focus on employee satisfaction as an internal process factor and product quality as an indicator of competitive advantage (see Porter, 1985[1]), and study how MO culture and behavior affect employee-level job satisfaction, product quality, and, consequently, organization-level financial performance. In response to rising concerns that organizational research has become bifurcated as either macro- or micro-oriented (Kozlowski and Klein, 2000; Pearce, 2003), our cross-level model links macro-level cultures and practices to micro-level employee attitudes and then to macro-level firm performance. Thus, our efforts reflect a more accurate description of organizational phenomena and offer new insights into how MO contributes to firm performance.

THEORY AND HYPOTHESES

Two predominant perspectives have emerged from MO literature. The cultural approach defines MO

[1] According to Porter (1985), there are two types of competitive advantages: differentiation and cost. *Cost advantage* arises when a firm operates at a lower cost than its competitors but offers a comparable product, whereas *differentiation advantage* is achieved when a firm provides superior products or services tailored to and valued by the target market. Following Zeithaml (1988), we view *product quality* as the extent to which a product or service meets customer needs. Therefore, product quality represents an indicator of differentiation advantage.

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as an aspect of corporate culture that places the highest priority on creating and maintaining superior customer value (Slater and Narver, 1998). In the effort to create superior customer value continuously, MO emphasizes the need to understand target customers and existing and potential competitors thoroughly, as well as the interfunctional coordination of firm resources and activities. An equally influential approach, the intelligence perspective views MO as 'the organizationwide *generation* of market intelligence pertaining to current and future customer needs, *dissemination* of the intelligence across departments, and organizationwide *responsiveness* to it' (Kohli and Jaworski, 1990: 6, emphasis in original). This approach prioritizes activities that generate, disseminate, and respond to customer needs across the whole organization.

In an attempt to bridge the two approaches, Homburg and Pflesser (2000) propose a complex model that conceptualizes MO on the basis of shared values, behavioral norms, artifacts, and behaviors. However, their conceptualization and operationalization of MO values and norms (e.g., openness of internal communication, innovation and flexibility, employee responsibility) do not relate specifically to MO; they could be applied to a variety of other types of cultures (e.g., innovation) as well. Hult *et al*.'s (2005) model is more consistent with the original MO work by Narver and Slater (1990) and Kohli and Jaworski (1990). They view MO behavior as market information processing and model it at the same level as MO culture; they also propose that the confluence of MO culture and behavior enhances performance through organizational responsiveness (Hult *et al*., 2005: 1174).

We offer an alternative approach by suggesting that MO includes both cultural and behavioral elements, such that MO culture precedes MO behavior. Given that Hult *et al*. (2005: 1179) do not find a significant interaction effect between MO culture and behavior, our alternative approach is viable as a description of the sequential link between MO culture and behavior. In particular, we posit that the two elements pertain to different levels: Whereas the cultural element relates to a set of values and beliefs that put customer interests first, and thus represents more fundamental aspects of the organization, the behavioral element pertains to specific MO activities at the operational level. Therefore, it becomes imperative to assess the relationships between MO culture and behavior across different levels within the organization. More specifically, we take a cross-level approach to assess the relationship between organizational-level MO culture and unit-level MO behavior.

MO culture and behavior: a resource-based view

According to the RBV, competitive advantage stems from a firm's unique resources that are valuable, rare, and inimitable (Barney, 1991). Firm resources include both assets and capabilities. Assets are observable and can be valued, such as spatial preemption, brand equity, and patents. In contrast, capabilities are not observable and difficult to quantify; they are the glue that brings the assets together and deploys them advantageously, such as Wal-Mart's docking system or Dell's logistics system (Day, 1994; Makadok, 2001). Because capabilities are deeply embedded in organizational routines, they are idiosyncratic and difficult to imitate or duplicate, which makes them the most likely sources of competitive advantage (Day, 1994).

Building on the RBV, many researchers suggest that MO may represent an important capability that can transform firm assets into superior performance (e.g., Hult and Ketchen, 2001; Hult *et al*., 2005; Zhou *et al*., 2005). Because MO culture pays close attention to customers' current and future needs, it provides the firm with insights about how to deliver better customer value and achieve superior performance (Slater and Narver, 1998). Moreover, as MO culture promotes cooperation among departments and individuals to achieve the same goals, it leads to shared feelings of employee contributions to the firm. Consequently, employees gain a sense of pride from belonging to the firm and feel more satisfied with their jobs (Kohli and Jaworski, 1990). Furthermore, with knowledge of what customers desire, market-oriented firms can improve their product quality and tailor it especially to the particular needs of their customers (Slater and Narver, 1998). Therefore, MO is *valuable* in that it enhances employee satisfaction, improves product quality, and enables firms to better serve their target markets and therefore achieve superior performance. However, despite significant attention to the MO concept, knowledge about how

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to become more market-oriented remains 'surprisingly limited' (Gebhardt *et al*., 2006: 37). Because little is known about its creation and implementation, MO is also *rare*. As an organizational culture, MO encompasses a complex set of values and beliefs deeply entrenched in organizational routines. It is the collective skills and processes that enable market-oriented firms to provide products specially tailored to market needs (Gebhardt *et al*., 2006), which makes it difficult for rivals to discern which part of skills and processes is most effective. Therefore, MO is *difficult to imitate* and *non-substitutable*.

However, a limitation of early RBV frameworks is the ignorance of implementation issue. As Barney (2001) notes, his 1991 framework assumes that 'once a firm understands how to use its resources . . . implementation follows, almost automatically,' as if 'the actions the firm should take to exploit these resources will be self-evident' (Barney, 2001: 53). However, the link between resources and actions may not be obvious, and proper strategy implementation remains a challenge. To address it, Barney introduces the VRIO (valuable, rare, inimitable, organizing) framework, which includes *organizing* as an additional key component. That is, a firm must be *organized* in a way that it can exploit the potential of its assets and capabilities fully (Barney, 1997).

Tied to the RBV, it is not surprising that MO literature pays only limited attention to implementation (Gebhardt *et al*., 2006). As Gebhardt *et al*. (2006) find in their ethnographic fieldwork, even if firms recognize and promote the importance of market-oriented values and beliefs, many make little discernable progress toward creating a market-oriented organization because they lack the means to implement such values and beliefs. That is, MO culture does not automatically lead to superior performance; instead, it must first enable certain organizationwide behaviors or activities, which in turn foster firm performance (Zhou *et al*., 2005). Similarly, without concrete MO actions, employees cannot achieve consensus regarding market-oriented symbols, rituals, and artifacts (Homburg and Pflesser, 2000), which may lower their job satisfaction. Moreover, MO behavior helps institutionalize MO cultural change through continuous activities that center on the use of market intelligence (Gebhardt *et al*., 2006) and thus makes constant product improvement possible. Therefore, to be effective, MO culture must be manifested through MO-related behaviors, such as collecting, disseminating, and responding to market intelligence. In this sense, unit-level MO behavior serves as the *organizing* mechanism that enables firms to exploit the full potential of their MO culture.

> *Hypothesis 1: Unit-level MO behavior mediates the effects of organization-level MO culture on (a) employee-level job satisfaction, (b) product quality, and (c) firm performance.*

Leadership quality as a complementary resource

According to the VRIO framework of the RBV, 'organizing' involves various *complementary* resources and capabilities that can facilitate the full exploitation of key resources and the successful implementation of core capabilities when used in combination (Barney, 1997). Adopting and implementing a new organizational culture requires changes or modifications to the existing culture, but because existing culture is deeply rooted in organizational history and routines, the change necessarily faces strong resistance from inside the firm (Hannan and Freeman, 1984). The most significant barrier for initiating MO, as Gebhardt *et al*. (2006) observe, pertains to internal political power, particularly with respect to 'instigating change, guiding change, and distributing the use of individual power' (Gebhardt *et al*., 2006: 53). In this sense, *leadership* becomes critical for breaking down the institutionalized power structure and facilitating the implementation of MO values and beliefs. Kotter (1995) similarly suggests the pivotal role of leadership in changing existing routines, because change requires the top management team to create a new system and then institutionalize the new approaches.

To facilitate changes throughout the whole organization as required by the successful implementation of MO, leaders must possess the abilities to envision and energize (Elenkov, Judge, and Wright, 2005). First, leaders must create an exciting and desirable vision of the future that MO culture can provide, which gives followers a vehicle they can use to develop their commitment and aspirations (Elenkov *et al*., 2005). By articulating an inspiring vision and stressing a strong sense of the collective mission and affiliation, leaders secure the cooperation of organizational members in MO implementation. Then, leaders must be champions of change and energize followers to change the

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status quo and break down institutional routines (Kotter, 1995). Leaders can emphasize their personal excitement about change, their willingness to take risks, and their perception of the importance of change for success (Awamleh and Gardner, 1999). Consequently, organizational members pursue MO goals with more enthusiasm and have more confidence in undertaking MO-related activities. Therefore, promoting a MO culture is more likely to lead to strong MO behavior when a firm has quality leaders.

Hypothesis 2: Leadership quality positively moderates the effects of organization-level MO culture on unit-level MO behavior.

Mediating role of employee satisfaction and product quality

Consistent with the call to enrich the RBV by examining the processes through which particular resources lead to superior performance (Barney, 2001), we assess the role of employee satisfaction and product quality in mediating the effects of MO behavior on firm performance. Our focus on employee satisfaction as an internal process also complements existing research on MO that mostly examines external process factors, such as customer loyalty (Kirca *et al*., 2005). Our consideration of product quality further adds to Hult *et al*.'s (2005) model by including a key indicator of competitive advantage (see Ketchen *et al*., 2007).

The issue of whether happy employees lead to better firm performance has been studied for decades. Although it seems logical that employees who are satisfied with their jobs are more productive and engage more in behaviors beneficial to the firm, early empirical studies indicate relatively low correlations between satisfaction and performance (Iaffaldano and Muchinsky, 1985). Different rationales (e.g., measurement problems, research design characteristics, levels of analysis) attempt to explain this low correlation. Of the various explanations offered, the level of analysis for employee attitudes and performance has the greatest impact. The failure to find a strong relationship at the individual level has stimulated searches for a job satisfaction-performance relationship at the organizational level (Ostroff, 1992). Moreover, limited empirical work investigating the relationship between aggregated attitudes and performance provides evidence that job satisfaction relates to organizational performance (Harter, Schmidt, and Hayes, 2002; Ostroff, 1992; Schneider *et al*., 2003). In line with this research stream, we expect that aggregated employee satisfaction positively affects firm performance.

More important, we argue that MO behavior contributes to firm performance through employee job satisfaction and product quality. MO behavior promotes the collective efforts of individual employees in various departments in response to market intelligence, with the basic idea that every person in the company can contribute something of value to end customers (Jaworski and Kohli, 1993). For example, Xerox includes in *every* job description an explanation of how the work affects the customer. In this way, Xerox factory managers know if they keep the factory clean and efficient, they help turn factory visitors into prospective buyers. Xerox accountants similarly understand that their billing accuracy and promptness in returning calls help generate favorable customer attitudes and build customer loyalty (Kotler and Keller, 2006). Such collective efforts and mutual understanding from different ranks help employees maintain their performance and achieve more satisfaction.

Satisfied employees are more devoted to their work and company. Satisfied frontline employees, for example, provide reliable, responsive, and quality service to customers with caring and empathy (Singh, 2000). Even if employees are not directly responsible for interacting with end customers, they are committed to knowing the customers and recognizing the role they play in facilitating the delivery of quality products to them. As a result, R&D team members can develop better products tailored to end customers, and manufacturing staff can improve control processes to produce products with fewer deficiencies.

High-quality products (including services) allow firms to command premium prices or to sell more of their products at a given price, which leads to a higher profit (Porter, 1985). With improved functions along the dimensions desired by target customers, high-quality products create unique images in the market that allow the firm to achieve high levels of customer loyalty and satisfaction (Porter, 1985). In turn, the costs of maintaining existing customers and attracting new customers decrease significantly, which again leads to better performance (Anderson, Fornell, and Rust, 1997). In

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summary, the effect of MO behavior on performance is mediated first by employee satisfaction and then by product quality.

Hypothesis 3: Unit-level MO behavior enhances firm performance through (a) employee-level job satisfaction, and then (b) product quality.

RESEARCH METHOD

Research context

To test our model, we collected data from manufacturing firms in China. As an emerging economy, China offers a rich setting to examine how MO contributes to performance. First, since 1978 when China started its economic reforms, it has progressed toward a 'socialist market economy,' in which the ownership and governance structures have been significantly reshaped (Tan and Tan, 2005). Although state-owned enterprises (SOEs) are still significant players, their importance to the economy is increasingly overshadowed by private sectors. For example, in 2004, the percentage of industrial output contributed by SOEs was only 15.1 percent, whereas that of private and foreign-invested firms was 48.1 percent and 30.1 percent, respectively (*China Statistical Yearbook*, 2006). Second, in the past two decades, the Chinese economy has been integrated into the world economy at a stunning pace. It has become one of the largest recipients of foreign direct investment and the fourth largest economy in the world after only the United States, Japan, and Germany (World Bank, 2006). As foreign firms rush into the Chinese market, business practices such as MO are becoming more prevalent. Local firms, especially SOEs, are strongly urged to embrace MO to survive the intensified competition (Zhou *et al*., 2005). Third, economic development in China is unevenly distributed across regions, and firms in more developed environments place greater emphasis on meeting customer needs (Davis and Walters, 2004). In terms of ownership types, SOEs are less willing to take risks and less proactive than private and foreign-invested enterprises. With such diversity, the Chinese context provides significant variance in our key constructs (i.e., MO culture and behavior). Fourth, considerable research efforts have focused on the issue of MO in China recently. With samples covering both local (including SOEs) and foreign firms, existing results consistently show MO leads to better performance in China (e.g., Deshpandé and Farley, 2000; Zhou *et al*., 2005).

Sampling and data collection

We obtained the sample through a multistage, stratified random sampling procedure. To cover the diversity of economic development, we grouped Chinese national and provincial capital cities into three areas on the basis of their average 'worker and staff member income.' We selected three cities from each area: Beijing, Shanghai, and Guangzhou from the highly developed area; Nanjing, Wuhan, and Chengdu from the moderately developed area; and Xian, Changchuan, and Guiyang from the developing area. Then, using the national industrial statistical databank of the State Statistical Bureau, we randomly selected 20 firms in each city with 100 or more employees from the manufacturing sector, which represent various types of ownership, including SOEs, private, and foreign-invested firms. Thus, the final sample consists of 180 manufacturing firms from nine major cities in China.

Furthermore, we employed a multiple-source, multiple-informant design to create our respondent list. Although many researchers employ a single-informant approach because of its convenience and cost efficiency, a multiple-informant approach can provide data of far superior quality (Van Bruggen, Lilien, and Kacker, 2002). We selected, from the employee lists provided by the personnel department of each firm, 22 employees as potential respondents, including a senior marketing manager, a senior personnel manager, 10 randomly selected middle managers, and 10 randomly selected frontline workers. Thus, our sample frame consists of 3,960 employees who occupy four types of positions in 180 firms. With this sample frame, we can collect information about different variables from respondents who work in corresponding positions (i.e., the most knowledgeable informants) and thereby reduce systematic measurement error. For example, we obtained information on MO culture from senior marketing managers and information about MO behavior from the 10 middle managers of different units in each firm. We can further aggregate the responses of multiple informants to reduce random measurement error.

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We first developed an English-language version of the questionnaire. To ensure conceptual equivalence, it was translated into Chinese and then back-translated twice by independent translators. Any conflicts were discussed by the researchers and translators until we reached an agreement. To ensure the content and face validity of the measures, we conducted five in-depth interviews with senior marketing managers, in which we asked them to verify the relevance and completeness of the questionnaire items. On the basis of their responses, we revised a few questionnaire items to enhance their clarity. We then conducted a pilot study with 20 middle managers, whom we asked to answer all the questionnaire items and provide feedback about their design and wording. We then finalized the survey based on the pilot study.

We recruited trained interviewers to conduct onsite interviews, because this method is more likely to generate valid information in emerging economies (Zhou *et al*., 2005). All respondents were informed of the confidentiality of their responses and given a cash gift equivalent to an average worker's salary for a half-day. These efforts were highly effective: We received 2,754 completed surveys from the 180 firms, a response rate of 69.55 percent (on average, we obtained 15 completed surveys from each firm, including two from senior marketing and personnel managers). Using a multivariate analysis of variance (MANOVA), we find no significant differences (Wilks' $\Lambda = 0.656$; $F = 0.958$; $p = 0.839$) between responding and nonresponding employees in their characteristics (gender, age, education level, and monthly income), which suggests nonresponse bias is not a concern. Because our unit of analysis is the firm level, the effective sample size is 180 firms.

Measures

The Appendix reports the measures and results of the validity analyses. Consistent with Hult *et al*. (2005), we adapt the measure of *MO culture* from Narver and Slater (1990) and the measure of *MO behavior* from Jaworski and Kohli (1993). We obtain the responses pertaining to MO culture from senior marketing managers (single informant) because they are most knowledgeable about the extent to which their firms promote MO culture. Because MO behavior emphasizes organizationwide coordination, we deem middle managers from different functional units appropriate respondents and use their aggregated scores to assess this measure (multiple informants). Borrowing from Awamleh and Gardner (1999), we develop the measure of *leadership quality* to include five items that assess the envisioning and energizing qualities of firm leaders. Because senior personnel managers have more interactions with firm leaders, they serve as the respondents for this measure (single informant). We measure *employee job satisfaction* with a scale adapted from Wood, Chonko, and Hunt (1986). Consistent with our focus on low-ranking employees, we aggregate the individual responses of frontline workers to attain an appropriate indicator (multiple informants). Following Zeithaml (1988), we measure *product quality* with three items that assess the degree to which a firm's products or services meet customer needs. Senior marketing managers (single informant) serve as the respondents because they are the most knowledgeable about this assessment. We measure *firm performance* with an objective indictor: return on assets (ROA). To establish the causal link of our model, we collected information about ROA one year after we conducted the survey from the statistical databank supplied by the State Statistical Bureau.

Controls

We include firm age, size, location, and ownership as controls. Firm age is the logarithm of the number of years the firm has been in operation, and firm size is indicated by the logarithm of the number of employees. We code firm location as a dummy variable, such that Beijing, Shanghai, and Guangzhou, the most developed areas, are coded as '1' and others as '0.' To highlight the differences that usually exist between SOEs and non-SOEs (Li, 2005), we also code firm ownership as a dummy variable: 1 = SOE, and 0 = otherwise (e.g., private, foreign-invested). We obtain this information from the statistical databank.

Interrater agreement

Because we aggregate the respondents' individual scores on two measures (MO behavior and employee satisfaction) to calculate the mean scores for a firm, we must demonstrate the interrater agreement for these two measures. We use the Spearman-Brown test of interclass correlation

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Table 1. Basic descriptive statistics of the constructs

	1	2	3	4	5	6	7	8	9	10
1. MO culture	1.00									
2. MO behavior	0.30**	1.00								
3. Employee satisfaction	0.24**	0.35**	1.00							
4. Product quality	0.41**	0.33**	0.31**	1.00						
5. Leadership quality	0.28**	0.29**	0.32**	0.20**	1.00					
6. ROA	0.17*	0.18*	0.25**	0.30**	0.09	1.00				
7. Firm age	0.01	0.01	−0.09	−0.03	0.07	−0.05	1.00			
8. Firm size	−0.05	−0.07	0.07	−0.11	0.03	−0.08	0.26**	1.00		
9. Firm location	−0.01	0.08	0.21**	−0.04	0.12	−0.13	0.12	0.28**	1.00	
10. Firm ownership	−0.08	−0.18*	−0.05	−0.12	−0.09	−0.20**	0.29**	0.12	0.00	1.00
Mean	4.03	3.90	3.06	3.86	3.83	0.04	2.87	6.07	0.33	0.25
Standard deviation	0.64	0.37	0.27	0.84	0.69	0.21	1.04	1.23	0.47	0.43

Notes: Sample size = 180.
** $p < 0.01$, * $p < 0.05$ (two-tailed).

(ICC) to examine the reliability of aggregated perceptions (James, 1982: 222) and find ICC(2) of 0.754 and 0.786 for MO behavior and employee satisfaction, respectively, well above the 0.60 benchmark. Therefore, the interrater agreement for each aggregated measure is satisfactory.

Construct validity

We conduct a confirmatory factor analysis to assess the construct validity of the latent constructs. Because the unit of analysis is the firm (i.e., sample size = 180), we use aggregated scores for the multiple-informant measures. Following Shook *et al*. (2004), we evaluate the model fit with the three most stable and robust fit indices: DELTA2, the relative noncentrality index (RNI), and the comparative fit index (CFI). As the Appendix shows, the confirmatory factor model results in DELTA2 = 0.97, RNI = 0.97, and CFI = 0.97, which indicates a good fit with the data ($\chi^2(142) = 200.80$; root mean squared error of approximation [RMSEA] = 0.048). We calculate the composite reliability on the basis of Fornell and Larker (1981). All composite reliabilities (ranging from 0.70 to 0.93) are greater than the 0.70 benchmark, with the average variances all above the 0.50 cutoff. Thus, these measures demonstrate adequate convergent validity and reliability. We also run skewness and kurtosis analyses for each measurement item; the results indicate the data are normally distributed.

We employ two methods to assess the discriminant validity of the measures. First, we run chi-square difference tests for all constructs in pairs (10 tests) to determine if the restricted model (correlation fixed at 1) is significantly worse than the freely estimated model (correlation estimated freely). All chi-square differences are highly significant (e.g., MO culture vs. MO behavior: $\Delta\chi^2(1) = 205.53$, $p = 0.000$), in support of discriminant validity. Second, we calculate the shared variance between all possible pairs of constructs to determine if they are lower than the average variance extracted for the individual constructs. For each construct, the average variance extracted is much higher than its highest shared variance with other constructs, providing additional support of discriminant validity (see the Appendix) (Fornell and Larker, 1981). Taken together, these results show that the measures in our study possess adequate reliability and validity. Table 1 reports the descriptive statistics and correlation matrix.

ANALYSES AND RESULTS

We test the hypotheses using structural equation modeling with a maximum likelihood estimation option. Because Hypotheses1 and 3 focus on the mediating logic, we consider Baron and Kenny's (1986) four conditions for mediating effects: (1) the independent variable must affect the dependent variable; (2) the independent variable must affect the mediators; (3) the mediators must affect the dependent variable; and (4) when mediators enter the model, the contribution of a previously significant independent

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variable must drop substantially for partial mediation and become insignificant for full mediation.

To test Hypothesis 1, we follow Baron and Kenny's (1986) procedures and estimate six models: Model 1 with employee satisfaction as the only endogenous variable; Model 2 adding MO behavior to Model 1; Model 3 with product quality as the only endogenous variable; Model 4 adding MO behavior to Model 3; Model 5 with ROA as the only endogenous variable; and Model 6 adding MO behavior to Model 5. We test Hypothesis1a by comparing Models 1 and 2, Hypothesis 1b by comparing Models 3 and 4, and Hypothesis 1c by comparing Models 5 and 6. All six models fit the data satisfactorily and we summarize the results in Table 2.

In Hypothesis 1, we predict MO behavior will fully mediate the effects of MO culture on (a) employee satisfaction, (b) product quality, and (c) firm performance. As Table 2 shows, MO culture positively affects employee satisfaction (Model 1, $b = 0.17$, $p < 0.05$), product quality (Model 3, $b = 0.40$, $p < 0.01$), and ROA (Model 5, $b = 0.16$, $p < 0.05$), satisfying the first condition. Furthermore, MO culture positively influences MO behavior ($b = 0.31$, 0.30, and 0.27 in Models 2, 4, and 6, respectively, all $p < 0.01$), satisfying the second condition. Moreover, MO behavior positively affects employee satisfaction (Model 2, $b = 0.28$, $p < 0.01$), product quality (Model 4, $b = 0.39$, $p < 0.01$), and ROA (Model 5, $b = 0.13$, $p < 0.05$), satisfying the third condition. Finally, the comparison shows that the positive effect of MO culture in Models 1, 3, and 5 becomes insignificant in Model 2 ($b = 0.11$, $p > 0.10$), Model 4 ($b = 0.13$, $p > 0.10$), and Model 6 ($b = 0.09$, $p > 0.10$) after MO behavior enters the model, satisfying the fourth condition. Taken together, these results indicate that MO behavior fully mediates the effects of MO culture on employee satisfaction, product quality, and firm performance, in full support of Hypotheses 1a, 1b, and 1c.

In Hypothesis 3, we predict that employee job satisfaction and product quality mediate the effects of MO behavior on subsequent firm performance. We construct a full model based on Figure 1 (Model 7, Table 3) and compare it with previous models. As Model 7 shows, MO behavior positively affects employee satisfaction ($b = 0.28$, $p < 0.01$) and product quality ($b = 0.28$, $p < 0.01$), employee satisfaction positively affects product quality ($b = 0.26$, $p < 0.01$), and both employee satisfaction ($b = 0.21$, $p < 0.05$) and product quality ($b = 0.26$, $p < 0.01$) relate positively to ROA. When we compare Models 7 and 4, we find that the positive effect of MO behavior on product quality in Model 4 becomes weaker in Model 7 ($b = 0.39$ vs. 0.28); thus, employee satisfaction partially mediates the relationship between MO behavior and product quality. The comparison between Models 7 and 6 shows that the positive effect of MO behavior on ROA in Model 6 becomes insignificant in Model 7 ($b = 0.13$ vs. -0.02), which indicates that employee satisfaction and product quality fully mediate the MO behavior–firm performance relationship. These results provide strong support for Hypotheses 3a and 3b.

To test Hypothesis 2, we run an additional model that adds the interaction of MO culture and leadership quality, calculated with Ping's (1995) technique, to Model 7. The results show that the interaction term positively influences MO behavior ($\beta = 0.13$, $p < 0.05$), in support of Hypothesis 2.

Effects of controls

As Tables 2 and 3 show, firm age relates negatively to employee satisfaction, which implies a potential liability of older firms in China. Firm location relates positively to employee satisfaction, such that workers in more developed areas (e.g., Beijing, Shanghai, Guangzhou) appear more satisfied with their jobs. However, firm location relates negatively to firm financial performance; firms in more developed areas experience a lower ROA than their counterparts in less developed areas. Possibly, intensified competition in these developed areas makes it more difficult for firms to earn high margins. In addition, firm ownership negatively affects MO behavior, such that SOEs tend to engage in fewer market-oriented activities than non-SOEs. Firm ownership also relates negatively to firm performance, which suggests that SOEs lag behind private enterprises and foreign-invested firms in generating profits. Leadership quality fosters MO behavior and employee satisfaction, but has no direct impact on product quality or performance.

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Table 2. Hypothesis 1–standardized structural equation parameter estimates (t-value)

Models	Hypothesis 1a			Hypothesis 1b			Hypothesis 1c		
	Model 1	Model 2		Model 3	Model 4		Model 5	Model 6	
Endogenous variables	Employee satisfaction	MO behavior	Employee satisfaction	Product quality	MO behavior	Product quality	ROA	MO behavior	ROA
MO culture	0.17*	0.31**	0.11	0.40**	0.30**	0.13	0.16*	0.27**	0.09
	(1.99)	(3.38)	(1.24)	(3.79)	(3.31)	(1.64)	(1.97)	(3.29)	(1.04)
MO behavior	—	—	0.28**	—	—	0.39**	—	—	0.13*
			(3.22)			(4.25)			(1.99)
Leadership quality	0.29**	0.22**	0.21*	0.02	0.22**	−0.03	0.04	0.22**	0.01
	(3.06)	(2.89)	(2.22)	(0.24)	(2.86)	(−0.36)	(0.43)	(2.74)	(0.14)
Controls									
Firm size	0.08	−0.03	0.09	−0.08	−0.03	−0.07	−0.02	−0.03	−0.02
	(1.05)	(−0.43)	(1.22)	(−1.08)	(−0.44)	(−1.01)	(−0.27)	(−0.43)	(−0.22)
Firm age	−0.14†	0.06	−0.16*	0.01	0.06	0.01	0.02	0.06	0.02
	(−1.73)	(0.86)	(−2.04)	(0.09)	(0.85)	(0.07)	(0.27)	(0.85)	(0.19)
Firm location (1 = more developed)	0.18**	0.12†	0.22**	−0.02	0.12†	−0.01	−0.13†	0.12†	−0.12†
	(2.35)	(1.69)	(2.85)	(−0.23)	(1.65)	(−0.08)	(−1.76)	(1.69)	(−1.65)
Firm ownership (1 = state-owned)	0.06	−0.15*	0.10	−0.07	−0.15*	−0.04	−0.18*	−0.15*	−0.17*
	(0.77)	(−2.00)	(1.34)	(−0.92)	(−2.00)	(−0.54)	(−2.43)	(−2.00)	(−2.24)
R-square	0.21	0.23	0.27	0.23	0.23	0.25	0.08	0.23	0.10

Goodness-of-fit:
M1: $\chi^2(102) = 163.78$, DELTA2 = 0.94, RNI = 0.94, CFI = 0.94; RMSEA = 0.05. M2: $\chi^2(146) = 214.45$; DELTA2 = 0.96, RNI = 0.96, CFI = 0.96; RMSEA = 0.05.
M3: $\chi^2(73) = 118.20$, DELTA2 = 0.95, RNI = 0.95, CFI = 0.95; RMSEA = 0.05. M4: $\chi^2(111) = 160.62$; DELTA2 = 0.96, RNI = 0.96, CFI = 0.96; RMSEA = 0.05.
M5: $\chi^2(49) = 87.62$, DELTA2 = 0.94, RNI = 0.94, CFI = 0.94; RMSEA = 0.05. M6: $\chi^2(81) = 127.40$, DELTA2 = 0.96, RNI = 0.96, CFI = 0.96; RMSEA = 0.04.

** $p < 0.01$, * $p < 0.05$, † $p < 0.10$ (two-tailed).

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Table 3. Hypothesis 3–standardized structural equation parameter estimates (t-value)

Models	Model 7 (Full model, full Sample)				Model 8 (Full model, sample without SOEs)			
Equations	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
Endogenous variables	MO behavior	Employee satisfaction	Product quality	ROA	MO behavior	Employee satisfaction	Product quality	ROA
MO culture	0.30**	0.10	0.12	−0.03	0.31**	0.14	0.06	−0.04
	(3.32)	(1.18)	(1.39)	(−0.26)	(2.84)	(1.31)	(0.67)	(−0.29)
MO behavior	—	0.28**	0.28**	−0.02	—	0.27**	0.30**	−0.01
		(3.24)	(3.22)	(−0.21)		(2.65)	(3.15)	(−0.13)
Employee satisfaction	—	—	0.26**	0.21*	—	—	0.25**	0.21*
			(2.90)	(2.20)			(2.64)	(1.98)
Product quality	—	—	—	0.26**	—	—	—	0.25*
				(2.64)				(2.16)
Leadership quality	0.22**	0.21*	−0.08	−0.02	0.21*	0.16†	−0.02	−0.00
	(2.53)	(2.19)	(−0.93)	(−0.27)	(2.06)	(1.65)	(−0.16)	(−0.03)
Controls								
Firm size	−0.03	0.09	−0.10	−0.02	−0.07	0.07	−0.15†	−0.01
	(−0.44)	(1.21)	(−1.37)	(−0.23)	(−0.80)	(0.83)	(−1.87)	(−0.13)
Firm age	0.06	−0.16*	0.04	0.05	0.03	−0.19*	0.04	0.08
	(0.85)	(−2.03)	(0.48)	(0.63)	(0.34)	(−2.13)	(0.45)	(0.92)
Firm location (1 = more developed)	0.12†	0.22**	−0.05	−0.17*	0.15†	0.18*	−0.04	−0.25**
	(1.68)	(2.85)	(−0.65)	(−2.25)	(1.77)	(1.97)	(−0.50)	(−2.89)
Firm ownership (1 = state-owned)	−0.15*	0.10	−0.06	−0.18*	—	—	—	—
	(−2.00)	(1.33)	(−0.89)	(−2.46)				
R-square	0.23	0.27	0.35	0.18	0.22	0.23	0.36	0.19

Goodness-of-fit:
M7: $\chi^2(212) = 287.56$, DELTA2 = 0.96, RNI = 0.96, CFI = 0.96; RMSEA = 0.05.
M8: $\chi^2(198) = 263.29$; DELTA2 = 0.95, RNI = 0.95, CFI = 0.95; RMSEA = 0.05.

** $p < 0.01$, * $p < 0.05$, † $p < 0.10$ (two-tailed).

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Post-hoc analysis

Because previous research highlights the differences between SOEs and non-SOEs, we run additional t-tests to determine if SOEs differ from other firms in their MO culture and behavior. The results show that though SOEs and other types of firms reveal similar ratings for MO culture ($t = 0.09$, $p = 0.93$), SOEs have a lower level of MO behavior than non-SOEs ($t = -2.46$, $p = 0.014$). These findings reaffirm that promoting a MO culture is different from implementing its behaviors, which again emphasizes the importance of MO behavior for the MO concept. Because SOEs display a lower level of MO behavior, we exclude them from the sample and rerun all previous structural equation models. The full Model 8 in Table 3 illustrates that the results of the sample without SOEs are highly consistent with those of the full sample, which supports the generalizability of our findings.[2]

DISCUSSION

Overall, our findings provide strong support for our cross-level framework and contribute to the literature in two major ways. First, our study adds to MO literature by integrating two influential approaches and uncovering the processes by which MO affects performance. Consistent with Homburg and Pflesser (2000) and Hult *et al*. (2005), we conceptualize MO as comprising both cultural and behavioral elements. In response to the call for more research on how MO affects performance (Hult *et al*., 2005; Kirca *et al*., 2005), we reveal a process internal to the organization: promoting MO culture in a company does not automatically lead to superior performance. Instead, MO culture must work through organizationwide MO behavior to affect performance. In particular, MO behavior fully mediates the effects of MO culture on employee satisfaction, product quality, and subsequent performance, demonstrating the importance of including the action element in the MO concept. Leadership quality plays a facilitating role by not only driving MO behavior, but also enhancing the effects of MO culture on MO behavior. Tied to the RBV, these findings suggest that MO culture and leadership may not be unique resources by themselves; rather, the confluence of MO culture and leadership creates a unique strategic resource that drives MO behavior and consequently better performance.

Moreover, MO behavior enhances firm performance through employee satisfaction and product quality. We find that employee satisfaction partially mediates the impact of MO behavior on product quality, and employee satisfaction and product quality fully mediate the effect of MO behavior on performance. Furthermore, product quality partially mediates the effect of employee satisfaction on performance, because satisfaction positively influences ROA ($b = 0.21$, $p < 0.05$), even after product quality enters the model (see Table 3, Model 7(4)). Given the emphasis MO places on organizationwide efforts to deliver customer value, these findings indicate the importance of making employees happy if the firm wants to translate MO-related activities into superior products and performance. Therefore, the confluence of a satisfied workforce and quality products represents a competitive advantage derived from both an internal factor (i.e., satisfied employees) and output (i.e., quality products).

Our framework and findings therefore reveal more precisely the underlying processes through which MO contributes to performance. Our findings imply MO culture is not the level that enhances performance directly; rather, its impact on performance is fully captured by MO behavior. Moreover, employee satisfaction and product quality capture the effects of MO behavior on performance. These results suggest the critical role of the 'organizing' component as a means to exploit the full potential of firm resources and capabilities (Barney, 1997, 2001), and enrich the RBV by examining its key logic from resources to action, from action to competitive advantage, and from competitive advantage to performance in the MO context (see Figure 1) (Ketchen *et al*., 2007).

Second, our study contributes to organizational research by proposing a cross-level framework that bridges the macro and micro facets of organizational phenomena. Although such phenomena are inherently integrated and interrelated, most organizational research adopts either a macro (e.g., organization) or a micro (e.g., unit/group/individual) orientation (Kozlowski and Klein, 2000; Pearce, 2003). In contrast, our cross-level model links organizational-level cultures and policies to unit-level practices and behavior, as well as to

[2] We thank an anonymous reviewer for suggesting this test.

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employee-level job satisfaction, and then to product quality, and finally to organizational performance. To the best of our knowledge, ours is the first study to examine the impacts of promoting MO culture across different levels within an organization. Our assessments of aggregated employee satisfaction and subsequent firm performance are consistent with a small but growing body of literature (e.g., Harter *et al*., 2002; Schneider *et al*., 2003) that indicates happy workers are indeed more productive. Our sampling technique reduces measurement error and generates more accurate results, because our use of multiple sources alleviates systematic errors such as common method bias, and our use of multiple informants reduces random error. Our consideration of subsequent performance also addresses the causality issue in our model. Therefore, we recommend that further research continue to employ a similar approach to conduct organizational studies.

Given the fast changing nature of its transitional economy, the Chinese market poses challenges for businesses operating there. Our findings provide managers with a deeper understanding of how to achieve superior performance in China. First, our results suggest that MO represents an important capability that can transform firm resources into better performance. However, managers must understand such transformation is neither automatic nor simple; rather, it must work through the organizationwide integration and dissemination of market intelligence to affect performance. In other words, simply promoting MO values and beliefs is not sufficient; more critical is developing MO activities systematically to generate market information and disseminate it across the organizations, and then be fast to respond to it. Second, managers need to recognize that MO alone may not be a unique strategic resource; its successful implementation requires complementary resources such as leadership quality. Because of the difficulty involved in promoting a new culture, leaders who are enabling and energizing are necessary to motivate organizational members to embrace new values and undertake changes. In this sense, the confluence of MO and leadership reflects a unique strategic resource. Therefore, firm leaders should not only pay attention to their technical capabilities to initiate actions, but also to their transformational qualities, such as their abilities to inspire and enable. Third, managers should understand that the performance benefits of MO pivot on happy employees who produce quality products. Because MO requires the coordination of organizational members at different levels, managers should guide behavior that facilitates communication and harmony across organizational levels, which will foster employee satisfaction and, in turn, quality products and better performance.

Our research also is subject to several limitations. First, we examine the effects of MO on subsequent performance in the short term (i.e., one year), but because the benefits of MO may take time to develop, additional research should assess its long-term impacts. Further research may also try to disaggregate performance into those portions derived from MO versus those resulting from being customer-led (see Connor, 2007; Ketchen *et al*., 2007). Second, our study represents an initial attempt to uncover the resource-action-advantage-performance model in the MO context. However, some important process factors are still missing, such as employee turnover and customer loyalty. Relatedly, product quality is only a proxy for competitive advantage. Further research should develop more refined measures and model additional process factors.

Third, our research context is manufacturing firms in an emerging economy (China), which may limit the generalizability of our findings to service industries or developed economies. However, our results from this new context also corroborate previous findings based primarily on data from developed economies. Whereas China shares many characteristics with other emerging economies, it also possesses some idiosyncrasies. For example, during its reform, the Chinese government has maintained a central role in guiding economic transitions (Li, 2005). Moreover, China has a long tradition of using *guanxi* to coordinate transactions, which cause some to refer to it as the 'lifeblood' of business conduct (Xin and Pearce, 1996). A question thus naturally arises: Does MO matter in China where free market competition has yet to be established and the use of *guanxi* is prevalent? In line with recent empirical studies (e.g., Deshpandé and Farley, 2000; Zhou *et al*., 2005), our findings suggest the answer is 'yes': MO is beneficial to firm performance even in China. More important, our results suggest that though MO enhances firm performance, the process by which it does so is more complicated than previously envisaged. These findings provide some new insights into the ongoing *Strategic Management Journal* debates

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about the merits of MO. Further research could also examine the intriguing issue of how MO interacts with nonmarket strategies such as *guanxi* to impact firm performance in emerging economies.

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APPENDIX: MEASUREMENT ITEMS AND VALIDITY ASSESSMENT

MO culture (from *senior marketing manager*): CR = 0.82, AVE = 0.60, HSV = 0.17		SFL
Customer orientation: first-order factor, CR = 0.72	SFL	0.763
◦ Our business objectives are driven primarily by customer satisfaction.	0.636	
◦ Our strategies are driven by beliefs about how we can create greater value for customers.	0.511	
◦ We emphasize constant commitment to serving customer needs.	0.637	
Competitor orientation: first-order factor, CR = 0.70		0.735
◦ We regularly share information concerning competitors' strategies.	0.620	
◦ We emphasize the fast response to competitive actions that threaten us.	0.796	
Interfunctional coordination: first-order factor, CR = 0.85		0.809
◦ We regularly communicate information on customer needs across all business functions.	0.773	
◦ We frequently discuss market trends across all business functions.	0.848	
◦ All of our business functions are integrated in serving the needs of our target markets.	0.798	
MO behavior (*aggregated score of middle managers*): CR = 0.93, AVE = 0.82, HSV = 0.15		
Intelligence generation: first-order factor, CR = 0.90	SFL	0.943
◦ We are fast to detect changes in our customers' product preference.	0.850	
◦ We are fast to detect fundamental shifts in our industry (e.g., competition, technology, regulation).	0.886	
◦ We periodically review the likely effect of changes in our business environment (e.g., regulation) on customers.	0.878	
Intelligence dissemination: first-order factor, CR = 0.82		0.903
◦ When something important happens to a major customer or market, the whole organization knows about it in a short period.	0.820	
◦ Customer suggestions and comments are disseminated at all levels in the organization on a regular basis.	0.845	
Responsiveness: first-order factor, CR = 0.87		0.866
◦ We pay close attention to the changes in our customers' needs.	0.875	
◦ If a major competitor launched a campaign to our customers, we implement a response immediately.	0.791	
◦ We can effectively implement a marketing plan in a timely fashion.	0.830	
Employee job satisfaction (1 = very satisfied, 5 = very unsatisfied) (*aggregated score of frontline workers)*: CR = 0.88, AVE = 0.59, HSV = 0.14		
1. Salary level.		0.677
2. The level of importance that my supervisor places on me.		0.851
3. Opportunity for promotion.		0.774
4. The degree of fairness with which my supervisor treats me.		0.850
5. Sense of job accomplishment.		0.662
Product quality (from *senior marketing manager*): CR = 0.85, AVE = 0.65, HSV = 0.17		
1. Our products and services meet market needs well.		0.746
2. Our products and services are very well liked by our customers.		0.869
3. We constantly improve our product quality to meet market needs.		0.804
Leadership quality (from *senior personnel manager*): CR = 0.83, AVE = 0.59, HSV = 0.15		
1. The leaders of our company have good qualities.		0.761
2. The leaders of our company make employees envision a compelling future for the company.		0.722
3. The leaders of our company emphasize the importance of having a collective sense of mission.		0.604
4. The leaders of our company dare to innovate and take risks.		0.789
5. The leaders of our company emphasize the need for innovation to strive for success.		0.609
Goodness-of-fit: ($\chi^2(142) = 200.80$; DELTA2 = 0.97, RNI = 0.97, CFI = 0.97; RMSEA = 0.048)		

Notes: Sample size = 180; SFL = standardized factor loading; CR = composite reliability; AVE = average variance extracted; and HSV = highest shared variance with other constructs.

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