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Market orientation and innovation performance: The moderating roles of firm ownership structures

Jing Song [a], Yinghong (Susan) Wei [b,*], Rui Wang [c]

[a] School of Economics and Management, Southwest Jiaotong University, China
[b] A.R. Sanchez, Jr. School of Business, TX A&M International University, USA
[c] Guanghua School of Management, Peking University, China

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ABSTRACT

The marketing literature documents inconsistent results on the link between Market Orientation (MO) and innovation performance. The agency theory suggests that agency problems exist in firms between the principal (owner) and the agent (managers). A proper firm ownership structure design may solve the principal-agent problem. In this study, we investigate an understudied research question: whether and how ownership structures may affect the relationship between MO and innovation performance? We posit that firms should align three different dimensions of ownership structures with MO in order to achieve a superior innovation performance. We assembled a unique data set, with 242 publicly-traded companies, by merging three different data sources in an emerging market — China to test our framework. The results support our proposed model, and confirm the moderating role of ownership structures in the relationship between market orientation and firm innovation performance in China. First, all things being equal, non-state-owned firms may achieve a higher level of innovation performance than their state-owned counterparts through their implementation of MO. Second, allowing top managers to have a certain fraction of the firm's ownership stake (called managerial ownership), that can switch risk preference and time preference of top manager's to those of shareholders, may foster the effect of MO on innovation performance. Third, a high ratio of major owners over minor owners (named as ownership concentration), that can empower and motivate shareholders to closely monitor a manager's behavior, may also strengthen the relationship between MO and innovation performance. The Chinese data from a transition economy sheds light on the ownership structure reforms in China, and provides novel new insights to the marketing theory and practice regarding the role of two new additional emerging dimensions of ownership structures — managerial ownership and ownership concentration in the relationship between MO and innovation performance. Theoretical and managerial implications are discussed, and several avenues for future research are proposed.

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1. Introduction

> "…Any business enterprise has two – and only two – basic functions:marketing and innovation (Drucker, 1954, p. 37)."

Successful innovation not only helps a firm achieve a competitive advantage; it also makes a significant contribution to the firm's survival, and its growth as well as financial success (Gatignon & Xuereb, 1997; Grinstein, 2008). Marketing scholars suggest that market orientation enhances the consequences of innovation (e.g., Han, Kim, & Srivastava, 1998; Hurley & Hult, 1998; Im & Workman, 2004; Kirca, Jayachandran, & Bearden, 2005). In this study, *innovation performance* is defined as the extent to which a firm's new products may contribute to its overall product performance. *Market orientation* (MO) refers to a marketing strategy in which a firm places the customer's needs and wants at the center of its tenets and tactics, and focuses on learning about its customers, competitors, and environment through an interfunctional coordination (Jaworski & Kohli, 1993, 1996; Slater & Narver, 1994a, 1994b). Although MO plays a pivotal role in the new product innovation process, the empirical evidence about the positive effect of MO on innovation is not consistent in the literature. On the one hand, some studies find a positive relationship between MO and new product innovation (e.g., Agarwal, Erramilli, & Dev, 2003; Atuahene-Gima, 1995; Han et al., 1998; Slater & Narver, 1994a, 1994b; Wei & Morgan, 2004). On the other hand, a number of studies show no direct impact of MO on the success of new products (e.g., Appiah-Adu & Ranchhod, 1998; Atuahene-Gima, 1996; Greenley, 1995; Im & Workman, 2004; Langerak, Hultink, & Robben, 2004).

* Corresponding author.
E-mail addresses: jsong@home.swjtu.edu.cn (J. Song), susanwei.yinghong@gmail.com (Y.(S.) Wei), smealwang@gmail.com (R. Wang).

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This inconclusiveness motivates further research to investigate the potential moderating variables in order to explain the unstable relationship between MO and innovation (e.g., Dibrell, Craig, & Hansen, 2011; Grinstein, 2008; Wei & Atuahene-Gima, 2009, etc.). For example, Grinstein (2008) found that highly competitive environments strengthen the effect of MO on innovation, but high technology turbulence weakens it. In addition, Wei and Atuahene-Gima (2009) found that the effect of MO on new product performance may depend on a proper reward system design. Furthermore, the effect of MO on firm innovativeness is also found to be affected by managerial attitudes towards the natural environment (Dibrell et al., 2011).

Despite the progress in this area, one important moderator is still missing in the literature. Internal organizational structure is regarded as one of the most important complementary resources for an organizational strategy's success (Chandler, 1962; Miller, 1988; Olson, Slater, & Hult, 2005). For example, firms may achieve its mission and goals only when its ownership structure supports a corporate strategy (e.g., Kor & Mahoney, 2005; Thomsen & Pedersen, 2000). *Ownership structure* represents "a formal institution, deals with the matter of how – and by whom – public company shares are owned" (Crossland & Hambrick, 2007, p. 771). Gedajlovic (1993) argues that ownership structure can serve as a moderating variable by changing the strategy–performance relationship, because it determines a firm's goals and modifies the behavior of senior managers through shaping incentive (Porter, 1990). For example, Li, Chau, and Lai (2010) found that the identity of the dominant shareholder (state-owned vs. non-state owned) significantly moderates the relationship between MO and organizational e-business assimilation.

Given the critical role of ownership structure in the corporate strategy–performance link, the main objective of this research is to investigate whether and how different ownership structure designs can change the effect of MO on innovation performance. Based on agency theory, we propose that different ownership structure designs can change the effect of MO on innovation performance. We collected data from more than 200 publicly-traded firms in emerging markets. We found that three different ownership structure designs (i.e., identity of the dominant shareholder, managerial ownership, and ownership concentration) significantly change the relationship between MO and innovation performance.

Our research attempts to contribute to the marketing and innovation literature in three ways. First, we suggest that ownership structure may affect the MO-innovation performance link. This has not been considered in previous studies. In this study, we use agency theory to examine the influence of ownership structure on the MO-innovation performance link. Investigation of the unknown impact of ownership structure may make key contributions to the literature by providing important new insights and new implications for business practice.

Second, the literature argues that studies of the MO-innovation performance link are heavily biased, and that more than 80% of the samples are from developed countries (Grinstein, 2008). An increasing number of scholars have realized that atomistic firms may generally reflect the reality of North American and other western economies, where most firms are privately owned. However, this may not be the case in emerging and transitional economies characterized by a variety of ownership structures (Peng, Tan, & Tong, 2004). As a consequence, it is questionable whether existing findings from developed countries can be generalized for firms in less-developed economies. For this reason, scholars argue that future research will benefit from investigations based on developing countries (Grinstein, 2008), and "mixed economies with heterogeneous ownership groups" (Gedajlovic, 1993, p. 748). To fill in this research gap, we select China, the largest emerging market in the world, as the research context to explore the role of ownership structures in the MO-innovation link. The emerging-market context of this investigation may extend current knowledge regarding the role of ownership structure in developing markets, and enrich the literature by adding new findings from a non-western context.

Third, the ownership structure reforms experienced in an emerging market such as China calls for new research on this topic. Although restructuring the ownership structure has been considered as the key to the success of China's economic reform in the past two decades, marketing scholars still have limited knowledge, and understanding of the impact of new ownership structures on MO and innovation. Salient ownership structural changes have been made in corporate governance in this economic transition process. For example, firms formerly owned solely by the state/government in centrally-planned economies have been allowed to include a variety of owners, such as individual shareholders, institutional shareholders, management shareholders, foreign investors, and employee shareholders (Dharwadkar, George, & Brandes, 2000).

However, most of the previous studies of emerging markets tend to investigate only simple ownership structures, such as state-owned versus non-state-owned (Li et al., 2010). In order to gain a better understanding of the changes in the firm ownership structure in China, this research examines two additional new ownership structures: managerial ownership, and ownership concentration beyond the dichotomy of state vs. non-state ownership. Ignoring these new ownership structures may prevent us from seeing the full and true picture of corporate governance and its effect on emerging markets. Unlike developed economies, managerial ownership is still minimal in China. Investigating the potential effect of newly-added ownership structures may further develop the understanding for both scholars and managers towards the ownership structure reforms in China. Simultaneously studying both old and new ownership structures may capture the complexities of ownership structures influencing the MO-innovation performance link, and contribute new insights to both the marketing literature and its practice.

The rest of this study is structured as follows: (1) the theoretical background is presented and the hypotheses are developed; (2) the research methodology issues are addressed; (3) the empirical results are reported, and the findings of the study are discussed from both academic and managerial perspectives; and (4) the limitations of the study are discussed and suggestions for future research are provided.

2. Theoretical framework and hypothesis development

2.1. Agency theory and principal-agent problems

Agency theory has been characterized as "a theory of the ownership structure of the firm" (Jensen & Meckling, 1976, p. 309). It informs a structured approach to analyze the economic incentives of a firm's management and its owners (Eisenhardt, 1989). The fundamental assumption underlying agency theory is that agency problems arise from conflicting goals and interests, and/or different risk or effort preferences, between the principal (owner) and the agent (managers). For example, shareholders are generally interested in promoting the long-term profitability of a firm and thus maximizing the value of their investments, while managers may be more short-term oriented with a greater emphasis on personal wealth, employment security, and prestige (Berle & Means, 1932; Jensen & Meckling, 1976). Moreover, shareholders might be risk-neutral because they can diversify their portfolios over multiple firms, whereas managers tend to be risk-averse in that their employment security and their income are often tied to a single firm,; and they are unable to diversify their employment risk in the case of failure (Eisenhardt, 1989). This divergence of managers' and shareholders' objectives shapes their conflicting interests in selecting and promoting a dominant strategic orientation of the firm (Baysinger, Kosnik, & Turk, 1991), and thus exerts different influences on the firm's innovation performance as well (Hoskisson, Eden, Lau, & Wright, 2000; Kochhar & David, 1996). In such a case, shareholders (principals) need to worry about their agents (managers) who may pursue their own interests at the expense of those of the principals, which is called the principal-agent problem (Jensen & Meckling, 1976).

To address this principal-agent problem, agency theorists suggest two major prescriptions – monitoring and motivating – to curb the self-serving, short-sighted, and risk-aversive behaviors of managers that may negatively impact their owners' wealth (Eisenhardt, 1989). Specifically, managerial actions can be monitored either by the firm's board of directors or by the shareholders themselves (i.e., "the monitoring hypothesis"), or motivated by offering ownership incentives that help align the interests of managers with those of shareholders (i.e., "the convergence-of-interest/motivating hypothesis") (Hölmstrom, 1979; Jensen & Meckling, 1976). Different ownership structures could be designed to address the agency problem through either monitoring or motivating mechanisms.

2.2. Ownership structure

This research studies three different dimensions of ownership structures with three different foci:

(1) *The identity of the dominant shareholder*: who owns a significant fraction of shares in the firm. It determines the major shareholder's objective set for the firm, and the way they exercise power to make it happen (Thomsen & Pedersen, 2000). Importantly, the dominant shareholder's desire can largely shape a firm's priority objectives (Gedajlovic, 1993; Porter, 1990). Thus, shareholder identity matters to the formulation of corporate strategies (Thomsen & Pedersen, 2000).
(2) *Managerial ownership*: whether the top management team members own stocks or shares in the firm. It serves to align the interests between managers and shareholders, and thereby motivates managers to maximize shareholder wealth by employing long-term-oriented strategies in their decision-making process (Berle & Means, 1932; Bethel & Liebeskind, 1993; Jensen & Meckling, 1976; Joseph & Richardson, 2002).
(3) *Ownership concentration*: to what extent the largest shareholders possess stocks and shares in the firm; the ratio between major owners and minor owners (De Miguel, Pindado, & De La Torre, 2004). Usually, only major owners have more motivation and power to monitor and influence managers to act in the best interests of the owner (e.g., Baysinger et al., 1991; Bergh, 1995; Lee & O'Neill, 2003).

Researchers have argued that it is necessary to investigate ownership structure from various dimensions, because different ownership structures influence corporate behaviors and outcomes in distinct ways (Demsetz & Villalonga, 2001; Jensen & Meckling, 1976). Ramaswamy (2001) criticizes most studies as having been concerned only with the insider/outsider dichotomy. Neglecting the other dimensions of the ownership structure may have led to the current literature's lack of understanding of the important role of other aspects of ownership structure in influencing corporate strategy and performance (Gedajlovic, 1993).

In the following section, we formally derive testable hypotheses. Fig. 1 describes our theoretical model—the effect of MO on innovation performance is moderated by three different dimensions of a firm's ownership structures: identity of the dominant shareholder, managerial ownership, and ownership concentration.

2.3. Direct effects of MO on innovation performance

Being market oriented means that an organization is committed to creating superior value for its target customers by understanding their needs (Narver & Slater, 1990). Maintaining continuous contact with customers will bring new ideas from the ever-changing marketplace, which in turn helps the firm to become more receptive to new ideas, enhance innovativeness (Deshpandé, Farley, & Webster, 1993) and to identify, elaborate, and translate current, emerging, and potential customer needs into creative product ideas and new offerings (Drucker & Noel, 1986).

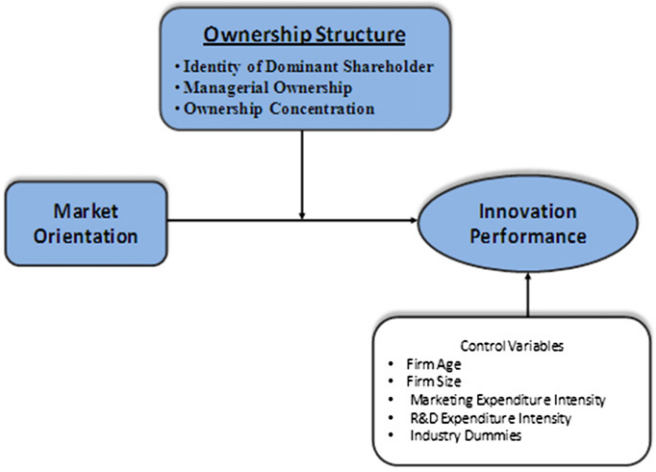

Fig. 1. Conceptual framework.

Moreover, being market oriented also requires maintaining a long-term perspective, which has long been viewed as an implicit part of implementing MO (Anderson, 1982). Firms with a long-term strategic horizon are more likely to innovate (Quinn, 1985). First, the implementation of MO facilitates building a long-term and a mutually beneficial relationship with a firm's customers and making a long-run commitment to creating superior value for customers, which will create sustainable competitive advantage and enhance long-run performance (Narver & Slater, 1990). Maintaining continuous contact with customers will bring new ideas from the ever-changing marketplace, which in turn helps the firm identify, elaborate, and translate current, emerging, and potential customer needs into creative product ideas and new offerings (Drucker & Noel, 1986).

Second, a market-oriented firm keeps benchmarking against its target competitors and seeks to differentiate itself from the competition by generating novel offerings (Han et al., 1998). By constantly tracking, analyzing, and responding to its competitors' moves, the firm can generate new and better product solutions, more precisely position new offerings, and enhance the performance of new products (Gatignon & Xuereb, 1997).

Third, market orientation also allows organizational members and functional units within the firm to closely cooperate and coordinate to gather, exchange, and respond to market intelligence (Kohli & Jaworski, 1990). Importantly, increased communication and integration across functions shapes an organizational climate that is more open and receptive to new and/or different perspectives, which is extremely conducive to the generation of novel innovation ideas (Grinstein, 2008; Wei & Atuahene-Gima, 2009).

Furthermore, being market-oriented requires the firm to continuously develop and introduce new offerings to match ever-changing customer needs and expectations (Kohli & Jaworski, 1990). Thus, a commitment to risk-taking and the tolerance of failures play a key role in fostering organization-wide responsiveness (Jaworski & Kohli, 1993). Employees in a market-oriented firm are often motivated to take risks in generating novel and unique ideas. A strong MO facilitates innovation by providing a supportive environment that enhances creativity, a tolerance for risk-taking, and an ability to identify novel opportunities (Han et al., 1998).

Combined, these aspects of MO help the firm focus on their long-run success, and facilitate the shaping of an appropriate organizational climate that encourages risk-taking. Both aspects are conducive to the generation of new ideas, and the transformation of new ideas to new

market offerings. In this sense, it is claimed that "innovation and new product success are more likely to result from being market-driven" (Slater & Narver, 1994a, p. 25). Thus, we expect the development of MO to influence a firm's innovation outcomes positively:

H1. The higher the level of MO, the better the firm innovation performance.

2.4. Moderating effects of ownership structures on the MO-innovation performance link

The implementation of MO is a collective and cumulative activity in firms. It requires a considerable degree of immobility on the part of various organizational resources, as well as organization-wide integration and commitment, which makes support from owners and top managers a necessary condition (Day, 1994; Narver & Slater, 1990). We propose that ownership structures may moderate the relationship between MO and innovation performance. In other words, the effect of MO on innovation might vary depending on the different designs of the ownership structure. Some types of ownership structure may foster the effect of MO on innovation performance, while other types may weaken the effect of MO on innovation performance.

2.4.1. Identity of the dominant shareholder

In a firm, the dominant shareholder (owner of a significant fraction of the shares) may have the power to set the firm's priority objective and shape the firm's strategy based on its interests (Gedajlovic, 1993). In emerging economies, market reform is implemented through privatization. *State-owned firms* are sponsored and controlled by the government as the dominant shareholder (Hoskisson et al., 2000; Li & Tang, 2010). Other ownerships with different degrees of privatization are taking shape in emerging economies, such as collectively-owned, privately-owned, and foreign-invested firms, which are categorized as *non-state-owned firms* in the relevant literature (i.e., Li et al., 2010). Generally, state-owned firms are inert to market and environmental dynamics. These firms do not need to worry about their performance and profitability because they are compensated by the government (Peng & Heath, 1996). In contrast, non-state-owned firms are usually sensitive to market opportunities, and actively seek to maximize profit from their investments. They receive insufficient or no institutional support, but have more flexibility in decision-making and business operations compared with their state-owned counterparts (Tsui, Bian, & Cheng, 2006). Such differences in the firm's interests, goals, and capabilities may change the strength of the relationship between MO and innovation performance in these two types of firms.

State-owned firms are usually subject to bureaucratic control by the government. State shareholders represent state ownership and are usually government authorities or public agencies. With the protection of the government, state-owned firms have stable supplies of resources and have a constant demand for their products (Li et al., 2010). Their managers often tend to "play safe", and they are less willing to take risks, are less proactive, and less aggressive (Peng et al., 2004). In addition, the evaluations of managers in state-owned firms are short-term oriented (i.e., a three-year basis in Chinese firms based on the policy of SASAC, SASAC, 2000). In such a situation, based on the agency theory's prediction, managers may also lack incentives to adopt a long-term perspective, and take any risks in their decision-making process. Thus, MO is less likely to be well-implemented by managers in state-owned firms. The link between MO and innovation performance may be weakened in state-owned firms.

On the other hand, non-state-owned companies are rooted in the marketing philosophy, with the maximizing of long-term profits as their goal (Li et al., 2010). Such priority objectives of a firm is consistent with the shareholder's desire, which is less likely to create the principal-agent problem. In order to cope with the dynamics, turbulence, and uncertainties in the rapidly changing market with constant competition, the managers in non-state-owned companies are motivated to explore market opportunities, to take risks by responding to customer feedback, and also to maintain long-term relationships with customers. Thus, MO may be highly likely to lead to better innovation by such motivated and capable managers in non-state-owned companies. We posit the following:

H2. The positive relationship between MO and firm innovation performance should be stronger in non-state-owned firms than in state-owned firms.

2.4.2. Managerial ownership

Managerial ownership refers to a specific arrangement in ownership structure that allows managers to have a certain fraction of the firm's ownership stake. It may motivate managers to switch from a manager's perspective to a shareholder's perspective in their decision-making process, which helps to align the managers' interests with those of the owner (Gedajlovic, 1993; Thomsen & Pedersen, 2000). We argue that managerial ownership may shift the top managers' risk preference and time perspective in strategic formulation and implementation, which in turn affects the link between MO and innovation performance.

A high level of managerial ownership is a long-term form of executive pay which can help to solve the principal-agent problem suggested by agency theory. It induces top management to place more emphasis on long-term-oriented strategies and outcomes, thus serving as a more efficient instrument to entice top management to tolerate risks and serve owners' interests (Carpenter, Pollock, & Leary, 2003). Well-aligned or converged interests foster a good environment for the firm's MO implementation. MO is more likely to lead to a long-lasting innovation outcome when a long-term rather than a short-term reward system is designed (Wei & Atuahene-Gima, 2009). Thus, a high level of managerial ownership strengthens the link between MO and innovation performance.

In contrast, a firm with a low level of managerial ownership may have difficulty in motivating managers to act in the interests of shareholders. The principal-agent problems such as self-serving, short-sighted and risk-aversive behaviors will not be addressed well by a low level of managerial ownership. Managers may often engage in short-run cost-augmenting activities and overemphasize short-run bottom-line earnings (Gray & Cannella, 1997; Hill & Snell, 1989). It has been found that nearly 80% of executives would sacrifice long-term value to meet short-term earnings targets (Graham, Harvey, & Rajgopal, 2005). Thus, the link between MO and innovation performance may be weakened in firms with a low level of managerial ownership, because the managers' short-term orientation may inhibit the MO's long-term perspective of meeting changing demands through the generation of innovative offerings. Taken together, we posit that:

H3. As managerial ownership increases, the positive relationship between MO and firm innovation performance becomes stronger.

2.4.3. Ownership concentration

The free-riding problem occurs when no single shareholder's ownership position is large enough for him/her to have an incentive to invest in the monitoring and information costs necessary to keep management acting in his/her interests (Fama & Jensen, 1983; Jensen & Meckling, 1976). To address this principle-agent problem, concentrated ownership may motivate shareholders to be active in monitoring the manager's decisions and actions (Alchian & Demsetz, 1972; Gedajlovic & Shapiro, 2002; Hill & Snell, 1988). In such a case, major shareholders are enticed to keep a close eye on managers' efforts to maximize shareholder value (De Miguel et al., 2004).

A high level of ownership concentration motivates the major owner to closely monitor the manager's decision-making. From the

perspective of agency theory, shareholders and managers have different attitudes towards risk. In particular, managers are more risk aversive than shareholders because managers are unable to diversify their employment (Eisenhardt, 1989). They have incentives to invest in risk-reducing strategies at the expense of shareholder wealth (Bethel & Liebeskind, 1993). Relatively concentrated share holdings empower major shareholders to exert pressures on managers to serve shareholder interest as "concentrated ownership is a powerful constraint on managerial discretion" (Gedajlovic & Shapiro, 1998, p. 535). In fact, it has been empirically found that increased ownership concentration dampens managerial predispositions to invest in risk-reducing strategies that reduce potential shareholder interests (Bethel & Liebeskind, 1993; Hill & Snell, 1988). For instance, empirical evidence suggests that large shareholders have an efficiency enhancing effect on a variety of firm strategies such as increasing investment in R&D activities (Hill & Snell, 1988), and correcting over-expansion and over-diversification (Bethel & Liebeskind, 1993).

In a firm with a high level of ownership concentration, the link between MO and innovation performance may be enhanced, because the concentration of large shareholders gives them more power to influence and monitor top management's decisions in order to seek sustainable growth potential and facilitate shareholder value maximization (Alchian & Demsetz, 1972). In the same vein, with major shareholders' support for and commitment to MO, managers may be more likely to keep constantly in tune with customers' needs, competitors' moves, changing market conditions, and emerging technologies, and seek ways to continuously develop and deliver new offerings to meet changing demands (Baysinger et al., 1991).

In contrast, in a firm with a low level of ownership concentration, the dispersed shareholding results in a high level of separation between ownership and control, which makes it less likely that shareholders will be motivated to monitor and detect whether the top managers are making decisions to pursue the shareholders' long-term interests (Bergh, 1995; Daily, Dalton, & Rajagopalan, 2003; Thomsen & Pedersen, 2000). In this situation, without shareholders' support and monitoring, the effect of MO implementation on innovation performance would be attenuated in the firm with a low level of ownership concentration. Therefore, we expect that:

H4. As ownership concentration increases, the positive relationship between MO and firm innovation performance becomes stronger.

3. Research method

3.1. Sample and data

We test the hypotheses using secondary-source data collected from several reliable sources covering a large number of Chinese manufacturing firms. One is the Database of Industrial Enterprises (hereinafter referred to as Census data) released by the National Bureau of Statistics of China (NBSC), which includes all manufacturing enterprises except very small-sized enterprises. NBSC has endeavored to maintain a high consistency in data collection across time, and in industries, and regional areas. For instance, the Bureau uses both a logic-testing method to detect any illogical data, and a historical method to track a firm's historical pattern (Pan, Li, & Tse, 1999; Tan & Peng, 2003). The accuracy of the information in the census has been carefully checked. In addition, statistics based on this database have been widely used in academic studies, because it provides an internally consistent and accurate source of data (e.g., Li & Park, 2006; Zhou & Li, 2008).

Another data source is the database of SinoFin-CCER™ provided by the Chinese Center of Economic Research (CCER), which provides information on all publicly-traded firms in China. When we merged the NBSC's census data with the data of listed firms from the SinoFin-CCER database, we checked whether there was any inconsistency between the two data sources on key variables such as total assets and profits. The results show that the data are identical between the two databases, building further confidence in the data quality of NBSC.

Finally, we collected data on MO by conducting a content analysis of the annual reports of listed firms in China. Annual reports are formal corporate communications most commonly examined in previous marketing research (e.g., Noble, Sinha, & Kumar, 2002; Yadav, Prabhu, & Chandy, 2007). There are strict laws and regulations (e.g., the Company Law, Securities Law, Annual Report Standards, etc.) on the information disclosure of annual reports of listed companies in China. Also, as required by the regulations of the China Securities Regulatory Commission (CSRC), these reports must be reviewed by certified public accountants (CPAs) under Book Auditing Rules and Generally Accepted Audit Criteria in the People's Republic of China with a certification comment letter issued. In addition, academic researchers have provided empirical evidence that there have been significant improvements in both compliance with IFRS (International Financial Reporting Standards), and in the consistency of the accounting methods in the annual reports of Chinese listed firms (Peng, Tondkar, van der Laan Smith, & Harless, 2008).

Merging these data sources enabled us to assemble a unique dataset for this study. The sample is composed of 242 companies across 29 two-digit coded industries. The total market capitalization of Chinese publicly-traded companies reached RMB 8799.2 billion at the end of 2006, accounting for about 45% of China's gross domestic product in the same year. Using this sample in our study ensures a satisfactory level of generalizability.

3.2. Measures

To link a firm's innovation performance to its MO and ownership structure, we used both a one-year and a three-year time lag between explanatory variables and the dependent variable to decrease the potential concern about their endogeneity (Boulding & Staelin, 1995).

3.2.1. Innovation performance

"Innovation often implies a successful new product introduced into the market as its outcome" (Im & Workman, 2004, p. 114). Many studies have measured innovation performance in a perceptual way (e.g., Deshpandé et al., 1993; Jaworski & Kohli, 1993; Narver & Slater, 1990), which is frequently questioned by executives who really want to have hard data as the justification for investment in MO (Jaworski & Kohli, 1996). In other words, it is important to examine the effect of MO on objective measures of performance (Jaworski & Kohli, 1996; Slater & Narver, 1994b). Moreover, although many others have measured firm innovation through objective R&D expenditure, this measure does not indicate "whether there are truly any differences in innovation across firms" (Kochhar & David, 1996, p. 77).

To address these concerns, we define innovation performance as the ratio of the sales revenue contributed by new products to the total sales revenue generated by all products for each firm. Actually many companies such as Osram Sylvania use this innovation sales rate to measure their innovation output. The new product's contribution to the overall sale revenue captures the actual outcomes of firm innovation, and is consistent with what is commonly recognized in marketing and innovation literature (e.g., Wei & Atuahene-Gima, 2009; Zhou & Li, 2008). Furthermore, this firm-level measure helps firms to better evaluate their overall innovation capabilities and outcomes, and makes it easier to justify the effects of different economic scales across firms (Griffin & Page, 1993).

The data on new product output were obtained from the Census database of NBSC. Based on the interpretation of NBSC, "new products are defined as: either the products that adopt completely new scientific principles, technologies, or designs, or those that are substantially improved in comparison with existing products in terms of performance

and functionality, through significant changes in structure, materials, design, or manufacturing processes" (NBSC, 2006, p. 292). The new product should be certified by the local government and the certification is valid generally up to three years (NBSC, 2006). Against this criterion, a product that has changes in shape or only minor changes in functionality does not count as a new product (Jefferson, Hu, Guan, & Yu, 2003). Thus, the NBSC's definition for new products is consistent with the Western innovation literature (e.g., Laursen & Salter, 2006). The NBSC's definition and measure of a new product have captured both the production and marketing processes of product innovations (Zhou & Li, 2008).

3.2.2. Market orientation

We conducted a content analysis of the firms' annual reports to collect the data on MO. Annual reports are commonly-examined forms of corporate communication in prior research, and content analysis of annual reports is gaining increasing acceptance in management and marketing research (e.g., Yadav et al., 2007), because it represents a way to access such abstract constructs as values, attitudes, and cognitions (Duriau, Reger, & Pfarrer, 2007), and provides a nonintrusive approach free from researcher demand bias, which is virtually inevitable in interviews or surveys (Woodrum, 1984).

A public-traded company's annual report documents its commitment to the public and its shareholders, which maps the managerial mind-sets of the senior executive (Noble et al., 2002). Market oriented firms such as IBM and Starbucks usually discuss its customers, competitors, and multiple functions in their annual reports, which reflects their level of customer orientation, competitor orientation and inter-functional coordination. Thus, we followed the standard procedures of content analysis used in prior studies (Noble et al., 2002) to determine the strategic orientation of the firm by counting relevant sentences for each orientation in the annual report.

First, we generated a set of phrases based on the definitions of customer orientation, competitor orientation, and inter-functional coordination. Second, two independent coders were trained on those definitions and the meanings of keywords related to each orientation. Third, the two coders independently read each annual report and used keyword searching to identify sentences possibly containing statements that reflect each of the three orientations. It is not compulsory for listed firms in China to present annual reports in English. Relative to their counterparts in Chinese, the English editions of annual reports of listed firms in China are of shorter length and lower readability (Ge, 2007). Therefore, we chose to content-analyze only Chinese editions of annual reports. Both coders were native speakers of Chinese, and were instructed to only consider statements that included the keywords and their derived forms. They then analyzed and derived inferences as suggested by the statements in the documents.

The inter-coder reliability was adequately high (Cohen's $k = .91$), exceeding the recommended cut-off level of 0.80 (Perreault & Leigh, 1989). The keywords and the sample coded sentences are presented in Appendix 1. In Appendix 2 we illustrate the similarity between our coded MO metric and the measures of the Narver and Slater's MO scale, which reflects the consistency between NS's MO scale items and our MO metric.

3.2.3. Identity of the dominant shareholder

We collected data on the identity of the dominant shareholder from the Census database, in which the identity of the dominant shareholder has been clearly categorized into five types where the weights of state-owned shares decrease from level 1 to 5. For example, a firm with a score of 1 means that it is absolutely owned and controlled by the state, while a firm with a score of 5 means that it has no state control. We recode them into 0–1 dummies, where 1 represents state-owned identity, and 0 otherwise.

3.2.4. Managerial ownership

We operationalize managerial ownership in the form of the ratio of a firm's stocks and shares held by the top management team to the total number of firm shares.

3.2.5. Ownership concentration

SinoFin-CCER™ data are used to gather the information on ownership concentration of each firm, which is measured by the fraction of firm shares held by the top ten shareholders [1](Demsetz & Lehn, 1985).

3.2.6. Firm size

We adopt the natural logarithm of the book value of assets as the proxy of firm size. Organization size and wealth are among the strongest predictors of innovation (Im & Workman, 2004). After all, the development of MO and new products requires the firm to consistently invest enormous resources (Narver, Slater, & MacLachlan, 2004). Thus, small, resource-poor firms are found to have difficulties in implementing MO, which eventually impairs the innovation consequences for the firm (Grinstein, 2008).

3.2.7. Firm age

On one hand, it is well-documented that the older the organization, the more bureaucratic and the less receptive it is to innovation (Aiken & Hage, 1971). On the other hand, it usually takes time and requires organization-wide efforts to build and implement market orientation (Narver & Slater, 1990). Many young firms experience a liability of newness (Boeker, 1989; Stinchcombe, 1965), which means new organizations have a higher possibility of failure than old ones. This is partly because aging can result in the accumulation of experiences in dealing with environmental change (Stinchcombe, 1965) and the formulation of routines and capabilities (Barnett, 1997), which may allow older firms to function well in implementing corporate strategies. Therefore, we include the effect of firm age, if any, on the innovation consequences for the firm. The Census database lists the founding date for each firm. Firm age was calculated by the number of days since incorporation (Kor & Mahoney, 2005).

3.2.8. R&D expenditure intensity

R&D expenditure intensity is measured as R&D spending divided by the total firm assets. Many previous studies have treated R&D expenditure as the proxy of firm innovative ability or innovation outcomes. We thus allowed for the intensity of R&D expenditure to rule out this alternative explanation.

3.2.9. Marketing expenditure intensity

We also include marketing expenditure as a control variable in the models, in that investment in marketing is directly linked to generating new customer solutions through a product development management process (Srivastava, Shervani, & Fahey, 1999). Consistent with Rust, Lemon, and Zeithaml (2004), we define marketing expenditure as all costs spent on marketing activities, such as market research, marketing communications, promotions, etc. As data on total marketing activities are not available, we used the summation of advertising expense and selling cost as the indicator of marketing expenditure. Following the approach of Kor and Mahoney (2005, p. 493), we operationalize marketing expenditure intensity as the ratio of marketing expenditure to total assets to adjust for any size effects in firm spending on marketing activities.

[1] Based on an anonymous reviewer's constructive suggestion, we conducted a robustness test by using an alternative measure of ownership concentration-the percentage of shares held by top five shareholders (Demsetz & Lehn, 1985; Gedajlovic & Shapiro, 2002). Hypothesis 4 is supported by this robustness test. Namely, when we operationalize ownership concentration as the percentage of shares held by top five shareholders, it strengthens the positive effect of MO on innovation performance ($\beta = 0.044$, $p < 0.01$).

Table 1
List of variables.

	Variable	Definition	Operationalization	References	Data Source
DV	Innovation performance	The extent to which a firm's new products contribute to its overall product performance.	= (sales revenue of new products/total sales revenue of all products)	Zhou and Li (2008)	The Census Database[a]
IV	Market orientation	A marketing strategy in which a firm places the customer's needs and wants at the center of its tenets and tactics, and focuses on learning about its customers, competitors, and environment through inter-functional coordination.	The summation of the counts of statements respectively representing customer orientation, competitor orientation, and inter-functional coordination in the listed companies' annual reports	Narver and Slater (1990); Noble et al. (2002)	Annual reports of listed firms[b]
Ownership structures (moderators)	Identity of the dominant shareholder	Who owns a significant fraction of shares of the firm.	0–1 dummies, where 1 represents state-owned identity, and 0 otherwise	Li et al. (2010)	The database of SinoFin-CCER™[c]
	Managerial ownership	The extent to which the top management team members own firm stock shares.	The proportion of firm stock shares held by the top management team	Kor and Mahoney (2005)	The database of SinoFin-CCER™
	Ownership concentration	To what extent the largest shareholders possess firm stock shares.	The proportion of firm stock shares held by the top ten largest shareholders	Gedajlovic and Shapiro (2002)	The database of SinoFin-CCER™
Control variables	Firm size	The scale of a firm's operations.	The natural logarithm of the book value of total assets	Gedajlovic and Shapiro (2002)	The Census Database
	Firm age	The length of time elapsed since the birth of a firm.	The number of days since incorporation	Kor and Mahoney (2005)	The Census Database
	Marketing expenditure intensity	All costs spent on marketing activities.	= (marketing expenditures / total assets)	Kor and Mahoney (2005)	The Census Database
	R&D expenditure intensity	All costs spent on R&D activities.	= (R&D expenditures / total assets)	Kor and Mahoney (2005)	The Census Database

[a] The Database of Industrial Enterprises provided by the National Bureau of Statistics of China (NBSC).
[b] Annual reports were retrieved at http://www.cninfo.com.cn/, the information disclosure platform designated by China Securities Regulatory Commission (CSRC).
[c] The database of SinoFin-CCER™ provided by the Chinese Center of Economic Research (CCER) at Peking University, China.

Table 2
Descriptive statistics and correlations.

Variables	M	SD	1	2	3	4	5	6	7	8	9
1. Innovation performance	.193	.247	1.000								
2. Market orientation	5.184	3.481	.380**	1.000							
3. Dominant shareholder identity[a]	.696	.461	−.232**	−.113	1.000						
4. Managerial ownership	.027	.100	.202**	.0843	−.373**	1.000					
5. Ownership concentration	.570	.108	−.090	.031	.002	.171**	1.000				
6. Firm size[b]	21.158	.941	.045	.014	.164**	−.160*	.063	1.000			
7. Firm age[c]	6618.904	5753.351	.032	.006	.046	−.060	−.158*	−.059	1.000		
8. Marketing expenditure	127000	339000	.172**	.219**	.006	−.027	.143*	.440**	−.067	1.000	
9. R&D expenditure	15198.33	40745.13	.175**	−.001	.074	.006	.057	.356**	.002	.401**	1.000

* $p < 0.05$.
** $p < 0.01$.
[a] State-owned = 1, and otherwise = 0.
[b] The logarithm of total assets.
[c] Days.

3.2.10. Industry dummies

We allowed for the industry effect by including industry dummies in all the models to rule out the possible influences of unobserved industry heterogeneities.

The description of variables used in this study is presented in Table 1. The basic descriptive statistics and the correlations among all the variables are reported in Table 2.

4. Analysis and results

We tested the hypothesized relationship by using moderated regression methods. We employed Tobit regression because it is suitable for a situation in which the dependent variable (innovation performance, measured by innovation intensity in this study) has a censored distribution (cf. Greene, 2012). We created interaction terms by using mean-centered independent variables to reduce the threat of multicollinearity (Aiken & West, 1991).

Table 3 reports the results. The results of Model 1 support H_1's prediction that MO has a significant, positive simple effect on innovation performance ($\beta_{MO} = .068$, $p < .01$) at the mean level of the three ownership structure variables. In Model 2, the coefficient of the interaction between MO and the identity of the dominant shareholder is $\beta_{MO \times identity} = -.099$, $p < .01$, meaning that the state identity of dominant shareholders (H_2) has a significant, negative moderating effect on the relationship between MO and innovation performance.[2] Our empirical analysis also supports H_3 (see Model 3) in that managerial ownership strengthens the relationship between MO and innovation performance ($\beta_{MO \times managerial\ ownership} = .085$, $p < .01$). H_4 is also supported (see Model 4), as the higher the level of ownership concentration, the stronger the relationship between an MO strategy and

[2] We also replicated the data analysis with the original scale treating the identity of the dominant shareholder as a continuous variable (i.e., the weights of state-owned shares decrease from level 1 to 5), and ran the identical Tobit regressions. The results are very similar to those we obtained by discretizing the dominant shareholder. That is, the main effect of MO on innovation performance is significant and positive ($\beta_{MO} = 0.070$, $p < 0.01$). Moreover, the interaction between MO and the identity of the dominant shareholder significantly strengthens innovation performance ($\beta_{MO \times Identity\ of\ the\ dominant\ shareholder} = 0.013$, $p < 0.01$), which indicates that the less state ownership in firm ownership structure, the stronger effect the implementation of MO will exert over firm innovation performance.

Table 3
Results of moderated regression analysis (DV = innovation performance from 2007).

Variables	Tobit models				OLS models			
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8
	β (t-value)	β (t-value)	β (t-value)	β (t-value)	β (t-value)	β (t-value)	β (t-value)	β (t-value)
Intercept	−.776(−1.62)	−.785(−1.68)*	−.778(−1.66)*	−.854(−1.85)*	−.755(−1.48)	−.764(−1.53)	−.750(−1.50)	−.830(−1.68)*
Market orientation (MO)	.068(4.48)***	.125(5.61)***	.052(3.33)***	.055(3.63)***	.066(4.11)***	.121(5.11)***	.052(3.12)***	.053(3.32)***
Identity of the dominant shareholder	−.071(−2.14)**	−.065(−1.98)**	−.073(−2.23)**	−.070(−2.18)**	−.070(−1.98)**	−.064(−1.83)*	−.072(−2.08)**	−.069(−2.01)**
Managerial ownership	.025(1.7)*	.022(1.52)	−.042(−1.75)*	.023(1.61)	.022(1.45)	.019(1.27)	−.037(−1.45)	.020(1.37)
Ownership concentration	−.029(−2.03)**	−.030(−2.19)**	−.029(−2.09)**	−.027(−1.97)*	−0.027(−1.81)*	−.029(−1.95)*	−.027(−1.84)*	−.026(−1.76)*
MO × identity of the dominant shareholder		−.099(−3.43)***				−.095(−3.10)***		
MO × managerial ownership			.085(3.37)***				.073(2.85)***	
MO × ownership concentration				.061(4.14)***				.061(3.84)***
Firm size	.041(2.11)**	.040(2.09)**	.041(2.14)**	.044(2.37)**	.040(1.93)**	.039(1.91)*	.039(1.94)*	.043(2.16)**
Firm age	.008(.56)	.003(.20)	.008(.62)	.007(.52)	.008(0.54)	.003(0.22)	.008(.60)	.007(.51)
Marketing expenditure intensity	−.003(−.19)	−.019(−1.08)	.004(0.23)	−.011(−.66)	−.002(−.09)	−.017(−.89)	.005(.28)	−.009(−.52)
R&D expenditure intensity	.025(1.59)	.035(2.25)**	.025(1.64)	.034(2.26)**	.024(1.46)	.034(2.05)**	.025(1.51)	.034(2.07)**
Industry dummies	Controlled	Controlled	Controlled	Controlled	Controlled	Controlled	Controlled	Controlled
LR χ^2 (*df*)	116.62(36)	128.13(37)	128.10(37)	133.19(37)				
Pseudo R^2	2.980	3.274	3.274	3.404				
F					3.54***	3.85***	3.78***	4.07***
R^2					.383	.411	.407	.425
Adj. R^2					.275	.304	.299	.320

Note: Two-tailed significance levels.
* $p < .10$.
** $p < .05$.
*** $p < .01$.

innovation performance ($\beta_{MO \times ownership\ concentration} = .061$, $p < .01$). Overall, the results confirm all of our theoretical expectations.[3]

In both Model 1 and Model 5, our control variables (including both marketing expenditure intensity and R&D expenditure intensity) generally demonstrate null effects on performance, except for firm size. Firm size is positively associated with innovation performance ($\beta_{firm\ size} = .041$, $p < .05$), indicating that within the context of our study, larger Chinese firms tend to have better innovation performance than their smaller counterparts. The insignificant effects of both marketing expenditure intensity and R&D expenditure intensity, but the significant positive effect of MO on innovation performance, indicate that more expenditure on marketing and R&D may not help Chinese firms to improve their innovation performance. Implementing the right marketing strategy—MO—is the key to increasing their innovation performance.

To confirm the robustness of our results, we conducted three additional analyses. First, we ran ordinary least squares (OLS) regressions assuming a continuous dependent variable following a normal distribution. The last four columns (Model 5 to Model 8) of Table 3 report the results, which are consistent with those obtained by employing Tobit regression models.

Second, to detect the possible differential effects of customer orientation and competitor orientation on innovation performance (Gatignon & Xuereb, 1997; Saboo & Grewal, 2013), we tested the interactions between customer/competitor orientation and the moderators (i.e., three dimensions of ownership structure), respectively. The results show that the effects of these two dimensions of MO on innovation performance generally follow those obtained from our main analysis treating MO as a composite index, providing additional support for H2–4.[4]

Third, we further collected data on the dependent variable of the year 2009. Due to ownership restructuring, and the entry and exit of firms, 38 firms in our original dataset could not be tracked until 2009. After deleting the four firms having missing values on marketing expenditures, we finally obtained the data of innovation performance for year 2009 for 200 firms. Based on the new data, we again tested all the hypotheses using a three-year time lag between the explanatory variables and the dependent variable. The results are consistent with those of the one-year time lag data analysis. That is, the main effect of MO, and the three moderating effects of ownership structure, received support from this follow-up analysis (see Table 4).

To illustrate the patterns of the significant interaction effects that support the hypotheses, we plotted the significant interaction effects using one standard deviation above and below the mean to represent high and low levels of the moderating variables (Aiken & West, 1991). Fig. 2 presents these plots with the slope test's results. As shown in Panel A, the positive relationship between MO and innovation performance is stronger in the firms with non-state-dominant shareholders than those with state-dominant shareholders, where all other variables are at the mean level. According to Panel B, the relationship between MO and innovation performance is positive when top management is rewarded by a higher level rather than a lower level of managerial ownership. This means that MO may not be able to create desired innovation performance if top management teams do not hold any of the stakes of the firm. Panel C shows that the link of MO to firm innovation performance gets stronger when firm ownership becomes more concentrated. The results provide clear evidence that the relationship between MO and innovation performance changes when the ownership structures are different.

5. Discussion

The goal of this study is to enrich marketing strategy literature by demonstrating the moderating role of firm ownership structures in the MO-innovation performance link within the context of China as an emerging market. Based on agency theory, agency problems exist in firms due to conflicting perspectives or incongruent goals, and different risk or effort preferences between the principal (owner) and the agent (managers). However, proper firm ownership structure design may solve the principal-agent problem and control the agent's behavior. We propose that the strength of a MO-innovation relationship may vary because of the different ownership structure contexts. In this study, we assemble a very unique data set from three different sources: Census data released by the NBSC, SinoFin-CCERTM provided by the CCER, and the annual reports of listed firms in China. The final example of 242 publicly-traded companies across 29 two-digit industries is used to test our hypotheses. We also employ a content analysis of the annual report to collect the data for MO measure.

The findings provide a new understanding of why the effect of MO on innovation is not stable in previous studies and how firm ownership structures may affect this relationship. We find that the effect of MO on innovation performance is conditional on a complementary organizational factor, the relevant design of ownership structure, in the context of publicly-traded firms in an emerging market - China. Three different ownership structure designs (i.e., identity of the dominant shareholder, managerial ownership, and ownership concentration) play significant moderating roles in the relationship between MO and innovation performance. Our results indicate that, in order to achieve high innovation performance, firms should orchestrate their implementation of MO with a properly-designed ownership structure. Thus, our findings confirm that firms can be organized for the full exploitation of MO's performance outcomes (Zhou, Li, Zhou, & Su, 2008). Organizational factors can exert great influence over the success of MO, because they shape the firm's relative emphasis placed on MO (Jeong, Pae, & Zhou, 2006), and work along with MO to promote the firm's receptivity to new ideas and innovation (Hurley & Hult, 1998).

Whether and how different ownership structure designs can change the effect of MO on innovation performance has not been considered in previous literature. This study's findings provide critical, novel insights into how shareholders of firms should adjust ownership structures in order to effectively implement MO and achieve superior innovation performance. The significant interaction findings of this study suggest that certain ownership structures may help MO to achieve a high level of innovation performance, whereas other ownership structures may inhibit MO's effect and reduce innovation performance.

6. Theoretical contributions and managerial implications

A systematic review of prior literature on the MO-innovation performance link indicates that inconclusive results remain, and the overall effect of MO may not be stable. This research seeks to contribute to the literature by theorizing and empirically testing how to design ownership structures in order to create superior innovation performance in market-oriented firms, in the context of emerging-market firms. Our research makes five important contributions to the body of knowledge of marketing as well as business practice.

First, state ownership and MO demonstrate a negative interaction effect on innovation performance. This result indicates that, all things being equal, non-state-owned firms may achieve a higher level of innovation performance than their state-owned counterparts through

[3] To detect the possible existence of heteroskedasticity, we ran both weighted least square regressions and Breusch–Pagan tests. The results of the weighted regressions reveal similar patterns to those of our Tobit regression models. As the null hypothesis Breusch–Pagan tests is that there is constant variance in each of our models, the nonsignificant chi-square leads us to accept this null hypothesis, which indicates that the Breusch–Pagan tests detects no heteroskedasticity in any of our models.

[4] Specifically, the coefficients of the interaction terms between customer orientation (CusO) and ownership structure variables are as follows: $\beta_{CusO \times identity} = -.062$, $p < .05$; $\beta_{CusO \times managerial\ ownership} = .071$, $p < .01$; $\beta_{CusO \times ownership\ concentration} = .058$, $p < .01$. The interaction terms between competitor orientation (ComO) and ownership structure variables: $n_{ComO \times identity} = -.092$, $p < .01$; $\beta_{ComO \times managerial\ ownership} = .027$, $p < .05$, $\beta_{ComO \times ownership\ concentration} = .058$, $p < .01$.

Table 4
Results of Tobit regressions (dv = innovation performance from 2009).

	Model 1	Model 2	Model 3	Model 4
Variables	β (t-value)	β (t-value)	β (t-value)	β (t-value)
Intercept	−6.696(−3.38)***	−6.839(−3.48)***	−7.065(−3.62)***	−6.675(−3.40)***
Market orientation (MO)	0.171(2.64)**	0.322(3.12)***	0.206(3.11)***	0.160(2.48)**
Identity of the dominant shareholder	−0.244(−1.83)*	−0.245(−1.84)*	−0.258(−1.96)*	−0.224(−1.69)*
Managerial ownership	0.092(1.38)	0.112(1.66)*	0.220(2.56)**	0.092(1.39)
Ownership concentration	−0.023(−0.38)	−0.035(−0.58)	−0.040(−0.66)	−0.011(−0.17)
MO × Identity of the dominant shareholder		−0.247(−1.91)*		
MO × Managerial ownership			0.272(2.55)**	
MO × Ownership concentration				0.137(2.03)**
Firm size	0.279(3.39)***	0.283(3.46)***	0.296(3.65)***	0.277(3.40)***
Firm age	0.049(0.85)	0.046(0.80)	0.046(0.80)	0.042(0.74)
Marketing expenditure intensity	−0.101(−1.17)	−0.138(−1.53)	−0.096(−1.14)	−0.098(−1.13)
R&D expenditure intensity	0.111(1.52)	0.135(1.82)*	0.097(1.34)	0.127(1.72)*
Industry dummies	Controlled	Controlled	Controlled	Controlled
LR χ^2 (df)	74.09(34)***	77.76(35)***	81.68(35)***	78.21(35)***

* $p < .10$.
** $p < .05$.
*** $p < .01$.

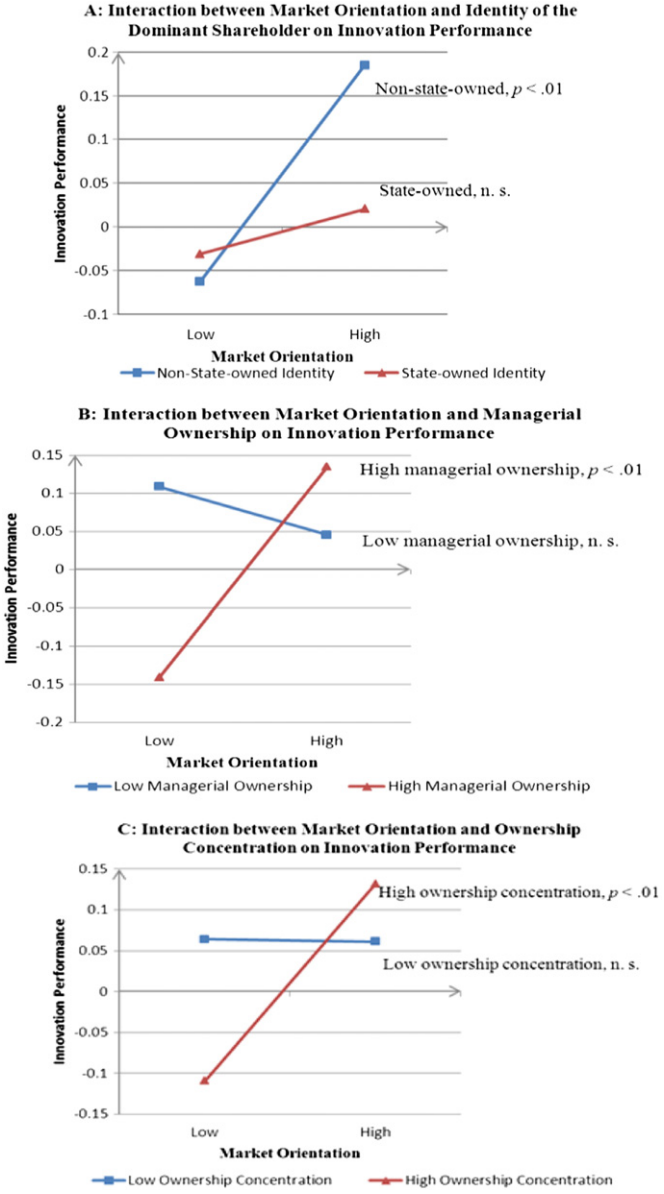

Fig. 2. Interaction effects between market orientation and ownership structures.

implementation of MO. Compared with state-owned firms, non-state-owned firms may be better aligned with MO in terms of risk-taking and long-term perspective in the innovation creation process. The implication for owners and stakeholders of state-owned firms is that they should consider how to face the challenge of their ownership structure, and perhaps design some effective incentives to motivate managers to take risks and make decisions with a long-term perspective in the MO implementation process. Otherwise, state-owned firms may not be able to compete well with their non-state-owned peers in the area of innovation performance.

Second, as predicated by agency theory, we demonstrate that a high level of managerial ownership has a positive interaction with MO on innovation performance. A high level of managerial ownership may help market-oriented firms to have better control of the principal-agent problem. This significant moderating effect suggests that managerial ownership is a complementary MO resource that enhances the impact of MO on innovation performance. The implication for shareholders and owners of the firm is that they should offer ownership incentives to top management teams in order to better align the managers' interests with their own interests. This finding may also provide a good solution for state-owned firms, and help them overcome the negative impact of state ownership on innovation performance.

Third, our findings demonstrate that a high level of ownership concentration also has a positive interaction with MO on innovation performance. A high level of ownership concentration may empower and motivate the major owners and stakeholders to closely monitor managers' decision-making and ensure a better alignment of the managers' goal with their goals. The implication of this finding for shareholders and owners is that it is important for them to maintain large shares of the stocks if certain shareholders or owners emphasize their innovation performance. When they own large shares, they may have more influence on managers to create superior innovation performance.

Fourth, this research sheds light on the inconsistent results on the link between MO and innovation performance as documented in the previous literature. The significant interactions between MO and ownership structures suggest that MO influences innovation performance through interaction with an appropriate ownership alignment. Previous research has failed to account for such interactions between MO and the ownership structure. Without taking into account the moderating role of ownership structures, the effect of MO on innovation may not be stable or accurate. In other words, the effect of MO on innovation depends on ownership structure design. The implication for stakeholders and owners is that they should simultaneously consider both MO and ownership structure for innovation. A mismatch of MO and ownership structure may prevent the firm from transforming MO's impact into effective

innovation performance. A good alignment of ownership structure is critical to a firm's dynamic innovation capability.

Fifth, these findings, based on the unique Chinese data, adds new evidence to the literature by examining MO in the context of an emerging market, where currently scholars still have limited knowledge and understanding. Using China, the largest emerging market in the world, as our research context helps test the generalization of extant marketing strategy theories. In addition, the ownership structure reforms in China also allows us to gain new understanding of the role of two additional new emerging ownership structures – managerial ownership and ownership concentration – in the relationship between MO and innovation performance, which have not been documented in the marketing literature before.

7. Limitations and directions for future research

Certain aspects of the results presented here should be interpreted in light of their limitations. First, the data were cross-sectional. It is possible that the implementation of MO follows good innovation performance, rather than innovation performance resulting from a pre-existing MO. The arguments tested were based on theoretical logic and findings reported in the literature, but it is difficult to rule out such reverse causality. Moreover, some unobserved sources of heterogeneity are not readily captured by the explanatory variables and control variables in our model. This unobserved heterogeneity is hidden in the error term, which also causes endogeneity. Future research needs to collect longitudinal data to confirm the direction of causality assumed in this study, eliminate some of unobserved heterogeneity, and correct the issue with the error term. Second, our sample selection may, to some extent, limit the applicability of the results to other contexts. The sample firms in this study are all publicly-traded firms in China. It must be cautioned that they may represent a clean and perhaps better-performing group of enterprises (Xu & Wang, 1999). Therefore, they cannot be representative of all enterprises in China. Future research should include other types of firms to assess whether our findings generalize well in other empirical settings. Third, we did not differentiate shareholders in detail. Different types of shareholders (such as retail, activists, institutional, insiders, etc.) may have different risk and temporal preferences, which may exert differential influences over the MO-innovation link.

The limitations of this study offer fertile avenues for further research. First, we focused exclusively on the three dimensions of firm ownership structure that are important in our research setting. Further research should consider broader dimensions of the ownership structure, such as family vs. institutional owners (e.g., Thomsen & Pedersen, 2000), pressure-sensitive versus pressure-resistant owners (Brickley, Lease, & Smith, 1988), or ownership type diversity. Second, we did not directly measure the changes in the seriousness of agency problems when the three ownership structure variables varied. Future research should find ways to explicitly capture this "process" variable. Third, it is likely that the nonlinear effects of ownership structure variables were neglected. As one example, Fama and Jensen (1983) point out that excessive managerial ownership may exert a rather negative impact on corporate performance. This is the so-called "entrenchment hypothesis," meaning that a too-high level of managerial ownership is likely to entrench managers as they don't need to worry about their employment and salary. Future research might be directed at empirically testing such nonlinear effects of ownership structures on the strategy–performance link. Finally, it is possible that there are interaction effects existing between the old ownership type and the two new ownership dimensions. The managerial ownership and ownership concentration might be significantly different in state-controlled and non-state-controlled firms. Thus, it would be interesting to examine the three-way interactions between the different ownership structure dimensions on the MO-innovation performance link.

In conclusion, this study attempts to gain an accurate understanding of the effects of MO on firm innovation performance by investigating the moderating role of ownership structures. Examining the three dimensions of ownership structure not only has enriched our understanding, but has also provided specific guidance to practitioners on how different ownership structures and MO may complement each other in order to achieve a superior innovation performance. Overall, the results confirm that ownership structures matter in the relationship between MO and innovation performance.

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Appendix 1. Illustration of keywords used for content analysis of annual reports

Market orientation	Keywords	Example of coded statements from annual reports
Customer orientation	Customer/consumer	The firm is trying to provide comprehensive and thoughtful value-added service to the consumer through optimizing product portfolio, enhancing the training on service encounter employees.
	Client	In order to satisfy the client need for developing new products, including Reo, Mercedes-Benz, Cummins, and General Motors, the firm is recruiting talented persons in order to enhance our firm's new product development capabilities.
	User	Reform the firm's marketing philosophy, consolidating quality consciousness, and try to win users over by high quality products.
Competitor orientation	Competition	The firm not only organizes the production very efficiently, but will form new core competitive competence in the areas of R&D and after-sales service, all targeting at lifting the firm's value-added capabilities.
	Position	According to the market demand conditions and by conducting sufficient market research, the firm invested 0.12 and 0.23 billion *yuan* in two projects located in *Tangshan* and *Wuhu*, respectively, aiming at boosting the firm's competitive advantages and further consolidating our position in the industry.
Inter-functional coordination	Department/function	Enhancing the coordination and interaction across functions, unifying the objective to pursue, and promoting strong initiative in work and execution capabilities.
	Coordination/ connectedness	The firm has taken a series of measures to enhance the balance and control in resource planning, highlight the leading role of marketing, and increase the coordination among production planning, finished product management, and transportation scheduling.

Appendix 2. Illustration of the similarity between MO scale items and coded MO content

	Representative items of Narver and Slater (1990, p. 24)	Examples of coded statements of MO in our study
Customer orientation	• Create customer value • Customer satisfaction objectives	"The firm is trying to provide comprehensive and thoughtful value-added service to the consumer through optimizing product portfolio, enhancing the training on service encounter employees." "In order to satisfy the client need for developing new products, including Reo, Mercedes-Benz, Cummins, and General Motors, the firm is recruiting talented persons in order to enhance our firm's new product development capabilities."
Competitor orientation	• Target opportunities for competitive advantage • Top managers discuss competitors' strategies	"The firm not only organizes the production efficiently, but will form new core competitive competence in the areas of R&D and after-sales service, all targeting at lifting the firm's value-added capabilities." "As increasingly more international brands of dairy products entering Chinese market, we need to figure out how to build a premium brand image among all the competitive brands by promoting the level of technology and management of our company."
Inter-functional coordination	• Information shared among functions • Share resources with other business units • Functional integration in strategy	"Enhancing the coordination and interaction across functions, unifying the objective to pursue, and promoting strong initiative in work and execution capabilities." "The firm has taken a series of measures to enhance the balance and control in resource planning, highlight the leading role of marketing, and increase the coordination among production planning, finished product management, and transportation scheduling."

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