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Strategic flexibility, green management, and firm competitiveness in an emerging economy

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ABSTRACT

Combining the dynamic capability perspective and institutional theory, this study examines how firms in emerging economies respond to green management pressures and measures what they gain by adopting green management practices. Drawing on data from 272 Chinese firms based on responses from two key informants in each firm, this study finds that strategic flexibility has a positive effect on the adoption of green management practices, and institutional support moderates this relationship by strengthening the positive effect. The study also advances a richer explanation of the link between adoption of green management practices and competitiveness by revealing the mediating role of organizational legitimacy in this link. These findings provide important implications for explaining how firms in emerging economies combine internal strategic flexibility and external institutional support to implement green management strategies, which in turn improves their legitimacy and competitiveness.

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1. Introduction

Green management (GM), popularly known as “going green”, is often viewed as a proactive environmental strategy (Molina-Azorín et al., 2009). Nowadays, firms endeavor to conduct GM activities as required by both business ethics (Luchs et al., 2010) and corporate social responsibility (CSR) (Cruz and Pedrozo, 2009). From a business ethics perspective, GM can improve organizational performance while helping firms preserve or protect the natural environment (Aguilera-Caracuel et al., 2012). The CSR perspective, from another view, suggests that GM helps firms improve their environmental performance to meet the relevant expectations of stakeholders such as governments, stockholders, employees, customers, and community members (Bengtsson, 2008; Jackson and Apostolakou, 2010). Both perspectives require firms to adopt green practices actively (e.g., green design, green manufacturing, and green marketing), not only for their self-interests but also for social interests.

Because ethical business behaviors are often culturally and institutionally determined (Matten and Moon, 2008; Tan and Wang, 2011), green issues may be interpreted differentially in dissimilar cultures or institutions. However, most studies on the antecedents and outcomes of GM are conducted in developed economies, and consequently questions concerning the factors that facilitate or hinder the adoption of

green management practices (GMPs) and the outcomes of these practices in firms operating in emerging economies have been under-explored.

Such research is important for two reasons. First, unlike developed economies, underdeveloped markets and institutional systems in emerging economies often engender environmental turbulences and a range of challenges for firms in such economies (Peng and Heath, 1996; Peng and Luo, 2000). These turbulences and challenges may cause ambiguity of GM-related outcomes and discourage firms from adopting GMPs (Rojšek, 2001; Branzei et al., 2004). Second, although China is “a global manufacturing base and a huge consumer market, it suffers from various serious environmental problems” (Lin and Ho, 2011: 67). Various pressures for GM have been imposed on firms operating in this context. Considering these conditions and constraints in emerging economy, it is necessary to ask: (a) What factors influence emerging economy firms to adopt GMPs? (b) How might they benefit from GMPs?

Recently, the body of research on GM is growing (Ambec and Lanoie, 2008). For example, Judge and Elenkov (2005) adopt the resource-based view (RBV) to examine how organizational capacity influences environmental performance. Delmas and Toffel (2004) base upon institutional theory to explain how institutional pressures affect firm green behaviors. These studies, however, generally adopt either an internal perspective (e.g., RBV) or an external perspective (e.g., institutional theory) as their theoretical basis. Few studies have combined these two perspectives to investigate both antecedents and outcomes of GMPs. We answer the aforementioned questions by employing two firm-level theories, the dynamic capability perspective and institutional theory, to explain the factors that contribute to variations in the GMP adoption and their effects on firm competitiveness.

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Firm-level resource investments in GM must be flexible to respond to the reversibility of these resource commitments (Rugman and Verbeke, 1998) due to substantial costs of compliance (Bansal et al., 2014), especially in emerging economies where firms typically face resource or capability deficits (Peng and Luo, 2000). Such *strategic flexibility*, defined as one dynamic capability that enables firms to rapidly and effectively reconfigure and reallocate resources and capabilities to respond to environmental changes (Sanchez, 1995, 1997), is a critical internal perspective for emerging economy firms to implement strategic practices such as GMPs. Take BYD Company Ltd., a fast-growing large manufacturer of automobiles in China, for example, these years they have accumulated various kinds of resources and capabilities, such as solar farm, battery energy storage station, and LED, which offer great flexibility to develop green products (i.e., electric vehicles). Therefore, this study posits from the dynamic capability perspective (Eisenhardt and Martin, 2000; Teece, 2007) that firms with strategic flexibility can employ, coordinate, and redeploy their firm-specific resources flexibly to effectively implement GMPs.

Institutional theory provides an external perspective from which to explain green issues (Babiak and Trendafilova, 2011; Campbell, 2007; Herremans et al., 2009). Since firm-level activities are embedded in the specific institutional context (DiMaggio and Powell, 1991; Li and Atuahene-Gima, 2001) and are therefore influenced by institutional forces (Campbell, 2007; Jamali and Neville, 2011), institutional theory has been increasingly deployed in explaining green issues. Prior studies find that several relevant institutional forces (e.g., policies, regulations, norms) may play important roles in determining the degree to which firms may adopt GMPs (Menguc et al., 2010). Especially, governments in economic transition typically play a critical role in encouraging firm-level green behaviors in markets in which such concepts are unfamiliar (Özen and Küskü, 2009; Rojšek, 2001). For example, these governments interested in promoting GMPs can design supportive policies (e.g., financial support, technical assistance, and green-related manpower training) that offer economic incentives, reduce long-term uncertainties, and provide resources needed for adopting GMPs (Lin and Ho, 2011). In this study we use the term *institutional support* to represent such governmental institutions and policies.

Moreover, because some scholars have found that institutional support in emerging economies often complements dynamic capabilities (e.g., strategic flexibility) (Malik and Kotabe, 2009), the interactive effects of institutional forces and internal firm-level capabilities on GMP adoption should be tested. For example, Marcus and Geffen (1998) find that institutional (e.g., government and market) forces interacted with firm capabilities (e.g., learning capabilities) to influence pollution prevention competencies. Menguc et al. (2010) find that governmental regulation moderated the effects of entrepreneurial orientation on the adoption of proactive environmental strategy. We therefore investigate whether institutional support will moderate the role of strategic flexibility in GMP adoption.

As such, the relationship between going green and being economically successful is growing (e.g., Babiak and Trendafilova, 2011; Siegel, 2009). Bilgin (2009), for example, has developed a model showing how a firm might go green while achieving competitive advantage. Ambec and Lanoie's (2008) comprehensive review regarding green benefits concludes that firms can indeed do well by going green. However, there are also opposite results. For example, some scholars claim that conducting GM would destroy firm competitiveness as it may deplete the use of firms' strategic resources in profitable businesses (e.g., Saha and Darnton, 2005). These divergent empirical results suggest that prior studies focus mainly on explaining *whether* and *why* GM activities influence firm-specific performance and competitiveness. Less attention has been paid to the question of *how* firms benefit from conducting GMPs. Given these theoretical and empirical inconsistencies, we argue that the relationship between GMP adoption and firm competitiveness is more complex than a direct effect (Molina-

Azorín et al., 2009), and some factors such as organizational legitimacy may play an intermediate role in this relationship.

Institutional theory helps to explain organizational legitimacy in GM research (Babiak and Trendafilova, 2011), because perceptions of a firm's acceptability and legitimacy are affected by cognitive, normative, and regulative institutions (Scott, 1995). Such institutions offer social values, norms, and belief systems by which to judge firm-level commitment to green-related activities (Bansal and Roth, 2000; Berrone et al., 2013). Menguc et al. (2010) indicate that studying the role of legitimacy might help to understand how proactive environmental strategies generate competitive advantage. Therefore, we develop a hypothesis for testing the reinforcing role of organizational legitimacy in the relationship between GMP adoption and firm competitiveness.

Overall, this study has three objectives. First, using the dynamic capability perspective, we explore how strategic flexibility influences firm-level GMP adoption, extending work in the prior literature on GM determinants. Second, we identify and examine the specific conditions (e.g., institutional support) under which the effect of strategic flexibility on GMP adoption may vary. Finally, we investigate whether adopting GMPs enhances firm competitiveness in part through the reinforcing role of legitimacy, explaining how and in what way GM impacts firm competitiveness.

2. Theoretical background and hypotheses

Based on prior GM literature (Lee, 2009; Peng and Lin, 2008), GM is defined as a set of strategic behaviors designed to viably and economically design, commercialize, and use products and processes while achieving environmental responsibility in firms, communities, and the natural environment (Dwyer, 2009; Peng and Lin, 2008). This definition implies that specific GMPs may include protecting the environment, using resources wisely and responsibly, minimizing the consumption of natural resources (e.g., air, water, energy, minerals) in final goods, recycling and reusing goods to the extent possible, eliminating toxins that harm people in the workplace and communities, and so on (Marcus and Fremeth, 2009).

GM is fundamentally different from traditional management, which consists of socially complicated processes with outcome uncertainty and long-term investment features (Etzion, 2007; Yu et al., 2009). For example, Marcus and Fremeth (2009) wonder whether consumers are willing to buy a wide range of green products. Thus GM outcomes cannot be easily measured by performance over any specific period, as it takes time for GMPs to generate enhanced competitiveness or profitability. For instance, GM is usually required to conform to government-imposed environmental standards. As Aguilera-Caracuel et al. (2012) argued, however, implementing environmental standards initially requires a considerable investment in environmental technologies and processes. Moreover, because firms cannot fully appropriate the value of GM, Marcus and Fremeth (2009) regard GM as a type of public good.

In attempting to understand the motivation to go green, some scholars emphasize the ethical and social reasons for pursuing green CSR irrespective of financial implications, while others focus on profitability (Siegel, 2009). This research generally follows two streams. The first stream concentrates on the antecedents of adopting GMPs such as firm characteristics (e.g., corporate transparency, reputation, resources and capabilities, and managerial characteristics) and social factors (e.g., responsiveness to public pressure) (see Etzion, 2007; Cuerva et al., 2014; Lee, 2009; Peng and Lin, 2008). The second stream emphasizes the outcomes of adopting GMPs, including green brand equity, green image, green competence, government and public endorsements, and performance improvement (Chen, 2008; Florida and Davison, 2001; Lee, 2009). In this paper, we consider both antecedents and outcomes of GMP adoption.

2.1. Strategic flexibility and GMP adoption

GMP adoption refers to the firm-level decision to implement GMPs in response to environmental and social issues (Lin and Ho, 2011). To overcome the challenges of resource and capability deficits of firms in emerging economies (Xin and Pearce, 1996), firms must be able to flexibly allocate and coordinate their resources effectively when adopting GMPs. According to the dynamic capability perspective, strategic flexibility reflects a firm's ability "to reallocate and reconfigure its organizational resources, processes, and strategies to deal with environmental changes" (Zhou and Wu, 2010: 549). Strategic flexibility enables firms to rapidly and effectively reconfigure and invest resources and capabilities to respond effectively to change (Bock et al., 2012; Sanchez, 1995, 1997). Such flexibility should enable firms to adapt their resources to a broad range of uses in effectively deploying green design, green manufacturing, green marketing, and so on. Highly flexible firms are also capable of coordinating the use of their resources by redefining their strategies, reconfiguring their supply chains, and redeploying their resources effectively (Sanchez, 1995; Zhou and Wu, 2010). This in turn enables them easily to synthesize subdivided functions and interests and reconfigure existing organizational routines to support newly adopted GMPs. Therefore, we argue that strategic flexibility should favor GMP adoption.

Although firms in emerging economies often lack the resources needed to engage in GM, which "requires a large amount of resources of a diverse nature" (Lee, 2009: 1106), strategic flexibility could mitigate such difficulties by enabling firms to apply existing resources more effectively (Sanchez, 1997). Strategic flexibility, termed by some as a complementary capability (Zhou and Wu, 2010), might facilitate the adoption of advanced GMPs (Aguilera-Caracuel et al., 2012). Matthysens et al. (2005) argue that firms with high strategic flexibility can readily adapt their resource usage to new applications, increasing the range of usage for GMPs.

Moreover, firms aware of the outcome uncertainty of GMPs often perceive them as highly risky. Integrating GMPs into daily business operations leads to innovative resource allocations (Lee, 2009; Lin and Ho, 2011), unavoidably elevating the risk involved in adopting them. Strategic flexibility provides a basis for managing such uncertainty and risk by switching resources to GMPs quickly and cheaply. Strategic flexibility also helps firms better reallocate resources and break down existing organizational routines (Gilbert, 2005; Sanchez, 1995; Zhou and Wu, 2010), which could facilitate implementation of GMPs.

Hypothesis 1. Firms with higher strategic flexibility will adopt GMPs more extensively than firms with lower strategic flexibility.

2.2. The moderating effect of institutional support

Scholars have found that the governments can regularly affect CSR behavior through supportive or restrictive regulations, norms, or policies, especially in emerging economies (Lin and Ho, 2011; Menguc et al., 2010). Marcus and Fremeth (2009) insist, for example, that governments should play a strong role in helping firms implement GMPs because GM is a type of public good. Özen and Küskü (2009) argue that governmental support can shape attitudes toward GMPs by supporting and legitimizing such practices.

According to institutional theory, in emerging economies governments provide institutional support as an important formal institutional factor (Peng and Luo, 2000; Wright et al., 2005), often in the form of policy interference in or support of GMPs (Hoskisson et al., 2000; Li and Atuahene-Gima, 2001). For example, some scholars have revealed that governmental institutional support could advance the adoption of CSR, including GMPs (Lee, 2008). Following Malik and Kotabe (2009) and Lin and Ho (2011), we define *institutional support* as the extent to which government institutions facilitate firm-level acquisition of key

resources, such as financial support, technical assistance, and green-related manpower training needed for adopting GMPs.

We argue that governmental institutional support reduces costs and uncertainties regarding GMPs that necessitate changing resource allocations, predominantly by providing financial, technical, and other resources. Because path dependence makes it difficult to change existing resource allocations and internal coordination (David, 1985), institutional support in emerging economies can help firms overcome some of the difficulties they face in reallocating and redeploying GM-related resources and capabilities. For example, local governments' commitment to continually increase the procurement of electric vehicles and offer other benefits (e.g., technological assistance and financial subsidies) acts as a complementary factor by reducing difficulties and costs of BYD company to produce green products (i.e., electric vehicles). We thus argue that institutional support serves as a complementary factor that can help firms achieve the full potential of strategic flexibility when implementing GMPs.

Although institutional support thus complements strategic flexibility in facilitating GMP adoption, different types of institutional support may exert diverse influential mechanisms. First, government-generated technological information and related support can help firms search for and select appropriate technologies (Malik and Kotabe, 2009), increasing firm engagement in GM (Aragon-Correa and Sharma, 2003). Such support reduces the costs and enhances the effectiveness of efforts to reallocate and redeploy resources and capabilities when absorbing new green technologies. In this respect, technological institutional support can effectively combine with strategic flexibility to facilitate GMP adoption.

Second, institutional support can facilitate marketing activities by assisting firms in building marketing knowledge, including understanding common quality standards, market segments, and distribution systems (Malik and Kotabe, 2009). Better understanding of target markets facilitates GM-oriented resource redeployment according to which types of green products a firm produces and which market segments it targets.

Finally, firms benefiting from strong institutional support are more likely to obtain additional government benefits such as low-interest loans, low tax rates, financial subsidies (Aragon-Correa and Sharma, 2003; Bagur-Femenias et al., 2013). Such benefits should lower the cost of reallocating resources and capabilities when initiating GM-related activities. As a result, firms with greater strategic flexibility should be more willing to employ GMPs.

Hypothesis 2. The relationship between strategic flexibility and GMP adoption is positively moderated by institutional support.

2.3. GMP adoption and firm competitiveness

The positive effects of GM on competitiveness have been amply demonstrated (e.g., Ambec and Lanoie, 2008; Berrone and Gomez-Mejia, 2009; Peng and Lin, 2008). For example, under the resource-based view, firms should develop valuable and unique green resources and capabilities (to lower costs and enhance differentiation) that contribute to superior performance while also developing an environmentally responsible attitude (Bansal and Roth, 2000; Christmann, 2000; Russo and Fouts, 1997). GMPs such as pollution prevention and resource savings may enhance production efficiency, leading to overall cost reduction (Hart, 1995). Other GMPs, such as environmental protection and product recovery, allow firms to differentiate their products (Rugman and Verbeke, 1998) and thereby increase competitiveness. However, from the perspective of classical economics, companies avoid environment protection investments because they provide no benefit and hinder future development (Chen, 2008), for example by depleting the use of strategic resources.

Despite these divergent results (Aguilera-Caracuel et al., 2012), several studies have shown that GM can create competitiveness-enhancing

opportunities (Marcus and Fremeth, 2009). We argue here that GM is a key lever in improving firm competitiveness in four ways. First, by adopting GMPs, firms can improve non-financial firm-specific outcomes, for example by creating a green image (Chen, 2008) or a green reputation (Siegel, 2009). Such an image or reputation may enable firms to improve competitiveness by establishing a differentiation advantage, commanding premium prices, sustaining improved relations with stakeholders, and developing new markets (Ambec and Lanoie, 2008; Siegel, 2009).

Second, through minimizing inputs and reducing waste disposal costs (Hart, 1995; Shrivastava, 1995), GMPs can improve competitiveness by making production processes more efficient and establishing a cost advantage (Yu et al., 2009). Christmann (2000) found, for example, that GM best practices contributed to cost advantage. Thus, GMPs create opportunities for reducing production costs and enhancing competitiveness (Berrone and Gomez-Mejia, 2009).

Third, extensive GMP adoption generates green competencies that enable firms to efficiently integrate environmental issues in their business strategies and corporate goals (Haden et al., 2009; Marcus and Fremeth, 2009). In this sense, such valuable and inimitable competencies could play a critical role in generating competitiveness and allowing such firms to outperform their competitors.

Finally, firms investing heavily in GM could enhance their competitiveness not only by avoiding the bad publicity of protests or punishment for noncompliance with current or future environmental regulations (Porter and van der Linde, 1995), but also by pushing for tighter regulations at both the national and industry levels to place competitors at a disadvantage (Ambec and Lanoie, 2008).

Hypothesis 3. Firms that adopt GMPs to a greater degree will experience relatively greater competitiveness.

2.4. The mediating role of organizational legitimacy

Institutional theory can help to explain organizational legitimacy concerning corporate GM (Bansal, 2005) because firms whose practices conform to common social values, norms, and belief systems will acquire organizational legitimacy (Babiak and Trendafilova, 2011; Berrone and Gomez-Mejia, 2009). Organizational legitimacy, “a generalized perception or assumption that the actions of an entity are desirable, proper, or appropriate within some socially constructed system of norms, values, beliefs, and definitions” (Suchman, 1995: 574), is critical to firm survival and growth (Zimmerman and Zeitz, 2002). We argue that, as GM is increasingly recognized as a more socially desirable or suitable corporate behavior by stakeholders (e.g., governments, suppliers, customers, investors, community members; see Ambec and Lanoie, 2008), and consumers increasingly patronize green companies and products, firms can increase their organizational legitimacy in the eyes of stakeholders by adopting GMPs. Oliver (1997), for example, indicates that organizational legitimacy, as a form of institutional capital, enhances competitiveness (Scott, 1995). Thus, in light of empirically inconsistent results for competitiveness outcomes of GM, the reinforcing role of organizational legitimacy may improve the understanding of the causal link between GMP adoption and firm competitiveness.

2.4.1. GMP adoption and organizational legitimacy

From the institutional perspective, firms may gain legitimacy by adapting and justifying their practices and actions to meet social expectations and requirements (Lee, 2011; Tan and Wang, 2011). Robust adopters of GMPs are more likely to enjoy the support of their stakeholders (Florida and Davison, 2001). Given recent findings on the importance of GM in increasing organizational legitimacy (Babiak and Trendafilova, 2011), we argue that firms can attain organizational legitimacy by adopting GMPs.

Specifically, to maintain organizational legitimacy firms may need to address green pressures from key stakeholders, such as governments, customers, industry associations, investors, the media, and activists (Flammer, 2013; Lee, 2008), who assess firm legitimacy according to social norms and values (Bansal and Clelland, 2004). First, in emerging economies in which infrastructure, supplier networks, and prior knowledge are lacking, governments could condition the ruling behavioral norms and define the boundaries of legitimacy (Peng et al., 2009). Bansal and Clelland (2004) insist that firms could gain governmental legitimacy by improving environmental performance (Marquis and Qian, 2013). In other words, firms may acquire organizational legitimacy by complying with GM-related governmental rules and regulations.

Second, consumers nowadays prefer products that are not harmful to the environment (Chen, 2008). Firms that adopt GMPs more extensively to minimize the negative environmental impacts of their products and processes will be more likely to meet the green desires and expectations of their customers (Herremans et al., 2009; Lai and Wong, 2012) and thus more likely to be granted organizational legitimacy by their customers.

Third, having a good GM reputation enables firms to join industry associations that concern environmental impacts, and such associations could act as legitimization mechanisms for firms to enhance organizational legitimacy (Etzion, 2007).

Fourth, firms may also earn organizational legitimacy from intermediaries by adopting GMPs. For example, banks and fund managers increasingly finance firms that develop in socially responsible ways (Ambec and Lanoie, 2008). Therefore, firms that employ GMPs will win these intermediaries' support and acceptance. Moreover, by adopting GMPs, firms could also gain legitimacy from the media and non-governmental organizations that are also concerned about green issues.

2.4.2. Organizational legitimacy and firm competitiveness

Generally speaking, organizational legitimacy as a resource helps firms to access other resources that are necessary for development (Zimmerman and Zeitz, 2002; Babiak and Trendafilova, 2011). The legitimacy—environmental and social legitimacy in particular—that firms obtain from adopting GMPs should enable them to negotiate better exchange conditions with partners and greater access to external resources (Hart, 1995; Russo and Fouts, 1997; Shrivastava, 1995), improving their competitive positioning. Also, increased social legitimacy will be more likely to garner stakeholder approval (Babiak and Trendafilova, 2011) and shield firms from stakeholder scrutiny, reducing the risk of social sanctions (Hart, 1995; Russo and Fouts, 1997; Bansal and Clelland, 2004). Socially legitimate firms can attract and retain customers, partners, and employees (Yu et al., 2009; Sharma and Henriques, 2005), thereby experiencing reduced employee turnover and fewer unproductive associations (Berrone and Gomez-Mejia, 2009). Moreover, such legitimacy should enable firms to more effectively leverage new market opportunities created by increased demand for green products and services (Berrone and Gomez-Mejia, 2009), further enhancing competitiveness.

In general, according to the above arguments pertaining to links between GMP adoption and legitimacy and between legitimacy and competitiveness, we propose a mediating hypothesis for organizational legitimacy. This effect implies that GMP adoption enables firms to gain legitimacy from society and their stakeholders (e.g., governments, customers, industry associations, banks, and funds), and that such legitimacy in turn contributes to maintaining firm competitiveness. That is to say, legitimacy as a mediator complements the impact of GMP adoption on firm competitiveness by strengthening the relationship between the two.

Hypothesis 4. The relationship between GMP adoption and firm competitiveness is mediated by organizational legitimacy.

3. Method

3.1. Sample and data collection

To test our hypotheses, we chose China as the empirical context. Over the course of three decades of economic reforms, China has been undergoing rapid economic development, but this achievement depends largely on extensive expansion of production with high energy and other natural resource consumption, increasing environmental pollution and exacerbating other environmental problems (Branzei et al., 2004; Zeng et al., 2012). Recognizing this fact, the Chinese government has begun to reduce the negative impact of its productive output on the environment. Therefore, Chinese firms are urgently exploring GM-related issues. Second, Chinese firms typically face an intrinsic scarcity of resources and competencies needed to support voluntary strategic change (Branzei et al., 2004; Peng and Heath, 1996). They must also compete with foreign multinational enterprises that have invested more heavily in GM. It is thus interesting to explore how Chinese firms become involved in GMPs and identify factors that facilitate this process. Third, emerging economies such as China is known for political interference in economic activities (Hoskisson et al., 2000). Facing increasing pressure to address green issues, the Chinese government has not only enacted many environmental policies and regulations by using compulsory measures (Zhang et al., 2008), it has also fined or closed down many polluting firms in response to nationally and internationally environmental complaints. However, the extant literature offers little explanation regarding how resource- and capability-poor Chinese firms adopt GMPs through government interference. Therefore, China offers an ideal setting for studying how institutional factors influence GMP adoption.

We first developed the English-language questionnaire on the basis of our literature review, and then employed a back-translation method to translate the responses from English to Chinese. To ensure the content and face validity as well as the clarity of the measures in the Chinese context, we conducted twenty in-depth interviews with senior managers often local firms. We asked these respondents to answer all the questionnaire items and provide feedback about the questionnaire's design and wording. On the basis of their responses, we revised a few items to enhance clarity. The Chinese-language questionnaire was then translated into English and back-translated into Chinese to ensure conceptual equivalence and accuracy, resulting in the final questionnaire (Berry, 1980).

To conduct this survey, we obtained the help of local governments and social organizations (mainly local statistical bureaus and industrial associations) with whom we had personal relationships. For example, we conducted a cooperative training course for statistical bureau officials. Moreover, they recognized that our study had the potential to enhance government agencies' understanding of firm-level strategic decision-making, which could increase acceptance of and compliance with their policies. We asked them to provide us with a list of local firms and randomly selected 500 from each of the three regions in mainland China (including 23 out of 31 provinces): the Eastern and Coastal Region (10 provinces), the Middle Region (7 provinces), and the Western Region (6 provinces). Data were collected from August 2010 to January 2011.

We administered the questionnaires through face-to-face interviews, which help to alleviate difficulties in collecting data from Chinese firms (Peng and Luo, 2000). We interviewed senior managers who were directly involved in strategic decision-making or implementation. We offered a summary of the study results to each respondent to increase the response rate. To minimize social desirability bias, we emphasized that there are no right or wrong answers and promised strict confidentiality. The informants were asked to recall their firms' decision-making processes over the past three years (Zahra, 1995).

To limit common method bias, we collected data from two informants in each firm. That is, two identical questionnaires were

distributed to a given firm, totaling 1500 pairs of questionnaires distributed. To administer the survey, our interviewers would first call a manager to set up an appointment and also asked him or her to invite another manager to complete the questionnaire independently. Then the interviewers presented the same questionnaire at the scheduled time in each manager's office and collected the survey after its completion.

We received 544 responders from 272 firms who fully completed the survey. The profile of responding firms is presented in Table 1. For each firm, we collected two questionnaires: questionnaire A was from CEOs/TMTs and questionnaire B was from at least middle-level managers (including TMTs and department heads from such areas as strategic planning, R&D, and marketing). Inter-rater reliability was checked to confirm that every pair of questionnaires elicited similar interpretations of key descriptions. Following Liu et al. (2013), the final data set was selected based on the rule that data pertaining to strategic flexibility, institutional support, and control variables were generated from questionnaire A, while other data were generated from questionnaire B.

Nonresponse bias was tested in two ways. First, t-tests yielded no statistically significant differences regarding firm size or age between the sample and the target population. Second, responses from early and late waves of participants were compared by demographic variables (Lambert and Harrington, 1990). Those t-tests also yielded no significant differences, indicating that nonresponse bias was not a serious threat. Next, we computed kurtosis and skewness of each item to test non-normality. The largest kurtosis value 0.75 was well below the recommended maximum value of 2.00 and the largest skewness value 0.43 fell below 5.00, which means all items were within the range of normality.

3.2. Variables and measures

The measures are presented in Table 2, reflecting word and sentence changes to enhance understanding in the Chinese context (Li and Atuahene-Gima, 2001). We used a seven-point Likert-type scale with *strongly disagree* and *strongly agree* as end points to measure these items.

To measure strategic flexibility, we referred to Sanchez (1995) and Zhou and Wu (2010) and operationalized it with six items. On the basis of Li and Atuahene-Gima (2001) and Lin and Ho (2011), we measured institutional support with seven items. Drawing on Marcus and Fremeth's (2009) theoretical study and Lin and Ho's (2011) operationalization, we used six items to measure GMP adoption. For organizational legitimacy, we consulted Elsbach (1994) and applied seven items to measure it.

Since the focus on particular GMPs and their effects on a specific type of competitive advantages (i.e., cost and differentiation advantages) represents some of the causal relationships explicitly (Christmann, 2000), we considered competitiveness as a consequence of GMP adoption. Moreover, Wu et al. (2008) emphasize that financial figures do not necessarily reflect long-term competitive advantage. We believe

Table 1
The profile of responding firms and respondents.

Firm attributes	Percent	Firm attributes	Percent
<i>Locations</i>		<i>Type of ownership</i>	
East	32.0	State-owned enterprises	40.1
West	57.3	Private enterprises	32.0
Central	10.7	Others (e.g., collective enterprises)	16.9
<i>Sales (million RMB)</i>		<i>Type of industry</i>	
≤50	22.1	Machinery	27.8
50–100	11.0	Chemicals	9.6
100–200	12.9	Electronics	6.7
>200	41.1	Energy	11.1
Unreported	12.9	IT	6.3

Table 2
Measurement items and validity assessment.

Constructs	Measurement items	Standardized loadings
Strategic flexibility $\alpha = .823$ AVE = .537	Indicate to what extent in your firm:	.758
	(1) The degree of sharing the same resources among each unit is high;	.782
	(2) The degree of utilizing the same resources in developing, producing, and selling different products and after-sale services is high;	.759
	(3) The difficulty and the cost of switching from one use of resources to another are low;	.693
	(4) You allow each unit to break normal procedures, in order to maintain flexibility and dynamics;	.720
	(5) You have a very smooth communication mechanism;	.681
Institutional support $\alpha = .909$ AVE = .649	(6) You actively change your strategies and structures to respond to external environments.	.785
	Please circle the number best describing the extent to which in the last three years your government and its agencies have	.828
	(1) implemented policies and programs that have been beneficial to your firm's operations;	.857
	(2) provided needed technology information and technical support to your firm;	.843
	(3) played a significant role in providing financial support for your firm;	.837
	(4) helped your firm to obtain licenses for imports of technology, manufacturing, and other equipment;	.725
	(5) provided direct financial policies, such as low-interest loans, low tax rates and governmental subsidies to your firm;	.753
GMP adoption $\alpha = .896$ AVE = .662	(6) encouraged your firm to protect your intellectual properties;	.812
	(7) created necessary legal support for entering new markets.	.812
	Whether your firm has been endeavoring to	.874
	(1) protect the environment;	.851
	(2) eliminate detrimental factors in the workplace;	.721
	(3) wisely and responsibly use resources, such as adopting energy saving facility;	.802
	(4) consciously minimize inputs of raw material by means of improving the efficiency of the production process;	
Organizational legitimacy $\alpha = .919$ AVE = .677	(5) recycle and reuse your firm's products;	.726
	(6) respect nature and enhance environmental consciousness, such as establishing a natural environmental management manual for internal use or launching natural environmental events.	.794
	By adopting green management, your company to what extent is accepted by	.889
	(1) peer firms;	.802
	(2) customer firms;	.874
	(3) local government;	.834
	(4) provincial government departments;	.831
Firm competitiveness $\alpha = .897$ AVE = .713	(5) market supervision departments, such as industrial and commercial bureaus, tax bureaus, and quality inspection departments;	.731
	(6) state-owned financial institutions, such as state-owned banks;	.833
	(7) official industry associations;	.897
	After your company implement green management, please indicate to what extent:	.907
	(1) your company often defeats your main competitors in the marketplace;	.843
	(2) your company can provide higher quality products and services to customers as compared with the main competitors;	
(3) your company can respond more rapidly to market demands as compared with the main competitors;		
(4) your company can respond more promptly to environmental changes as compared with the main competitors;		
(5) the relational networking of your company can help in responding marking demands rapidly.		

Note: Respondents answered these questions with reference to the previous three years.

here that competitiveness can capture GM outcomes more accurately than firm performance. Thus, following Wu (2008) and Wu et al. (2008), we measured firm competitiveness with five items.

To account for the effects of extraneous variables, we included several control variables. *Firm age* was measured as the natural logarithm number of years from the founding year to 2010. *Firm size* was measured as the natural logarithm number of the firm's overall average sales over 2007 to 2009. *Industrial development stage* was classified as one of four stages and coded as (1) introduction, (2) growth, (3) maturity, and (4) recession. *Firm ownership* was created as dummy variables including state-owned, private-owned enterprises, with other enterprises as baseline. *Industry* was classified into six categories: machinery, chemicals, electronics, energy, IT, and others. We consolidated the industry classification variable by creating dummies for the five industry segments and grouping the remaining industry segments into a category called *other*, which served as the base case in our analysis. Lastly, because GM practices may vary by region due to differences in local regulations, community preferences, and technologies (Bansal, 2005; Lee, 2011), we divided geographic area (*region*) in our samples into three categories: the East and the West were encoded, and the Central as the base case.

4. Analyses and results

4.1. Construct validity

We evaluated the convergent validity of the constructs in this study by examining both factor loadings and the average variance extracted (AVE). As Table 2 shows, the factor loadings on each construct were

above the threshold value of 0.70 recommended by Anderson and Gerbing (1988). Table 1 also shows that all the AVE values were well above the recommended threshold level of 50% (Bagozzi and Yi, 1988).

We tested for discriminant validity by comparing the square roots of the AVE of each construct (in the diagonal elements in Table 3) with the correlation coefficients across all theoretically related constructs (in the off-diagonal elements in Table 3). Fornell and Larcker (1981) suggest that a construct's discriminant validity is adequate when the diagonal elements are greater than each of the off-diagonal elements in the corresponding rows and columns. Table 3 shows that discriminant validity was achieved in this study.

4.2. Hypothesis testing

Table 3 provides the means, standard deviations, and correlations for each variable. Strategic flexibility is significantly positively associated with GMP adoption. The relationship between GMP adoption and organizational legitimacy is positive. Moreover, both GMP adoption and organizational legitimacy are significantly related to firm competitiveness. Taken together, these findings suggest that our hypotheses are reasonable.

The results of regression analyses are shown in Table 4. In Model 1, we entered control variables and institutional support into the regression models and found that the West locations exhibit significant negative effects on GMP adoption ($\beta = -.21, p < .05$), whereas institutional support positively affects it ($\beta = .30, p < .001$).

In order to test Hypothesis 1, we added strategic flexibility to Model 2 in Table 4. We found a significantly positive effect of strategic

Table 3
Correlations and discriminant validity.

Variable	Mean	S.D.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1. Firm age (ln)	2.57	.93	1.00																
2. Firm size (ln)	1.05	2.64	.35**	1.00															
3. State-owned	.40	.49	.34**	.28**	1.00														
4. Private-owned	.32	.47	-.28**	-.20**	-.56**	1.00													
5. Region_East	.32	.47	-.17**	.01	-.21**	.27**	1.00												
6. Region_West	.57	.50	.13*	.00	.21**	-.20**	-.08	1.00											
7. Industry development	2.60	.57	.29**	.14*	.16**	-.14*	-.06	.09	1.00										
8. Machinery	.28	.45	.05	.07	-.14*	.02	-.07	-.10	-.02	1.00									
9. Chemicals	.10	.30	.03	.04	.04	-.03	-.01	.05	-.02	-.15*	1.00								
1. Electronics	.07	.25	-.09	-.14*	-.10	.14*	.20**	-.16**	-.03	-.13*	-.09	1.00							
11. Energy	.11	.31	.04	.14*	.17**	-.06	-.12	.16**	.05	-.19**	-.08	-.09	1.00						
12. IT	.06	.24	-.10	-.06	-.15*	.12	.31**	-.24**	-.06	-.16**	-.08	-.07	-.09	1.00					
13. Institutional support	4.81	1.03	.03	.15*	.14*	-.04	.18**	-.08	-.03	-.07	.05	.01	.02	.03	.81				
14. Strategic flexibility	4.66	.96	-.11	-.03	-.11	.12*	.21**	-.21**	-.12	-.06	.00	-.02	-.09	.06	.47**	.73			
15. GMP	5.27	.96	-.12*	.02	-.10	.11	.10	-.13*	-.09	-.06	.12	-.05	-.01	.13*	.28**	.38**	.81		
16. Legitimacy	5.13	.93	-.03	.09	-.07	.13*	.28**	-.29**	-.10	.01	.05	.05	-.03	.10	.40**	.42**	.59**	.82	
17. Competitiveness	4.72	.92	-.13*	-.02	-.13*	.17**	.22**	-.15*	-.17**	-.13*	.08	.10	-.04	.08	.30**	.39**	.49**	.54**	.84

Note: Diagonal elements (in bold) are square roots of the AVE values. +p < .10; *p < .05; **p < .01; ***p < .001; two-tailed test; N = 272.

flexibility on GMP adoption ($\beta = .28, p < .001$), providing support for Hypothesis 1.

To test Hypothesis 2, we minimized multicollinearity by using hierarchical moderated regression analysis with a mean-centering procedure for the independent and moderating variables (Aiken et al., 1991). As shown in Model 3 of Table 4, we observed significant positive coefficients for the interaction effect of resource flexibility and institutional support ($\beta = .12, p < .05$), supporting Hypothesis 2.

We then tested Hypothesis 3, according to which firms that adopt GMPs to a greater degree will evidence relatively stronger competitiveness as compared with those that do not. In Model 6 of Table 4, we found a positive effect of GMP adoption on firm competitiveness ($\beta = .44, p < .001$). Thus, our results supported Hypothesis 3.

The mediation hypothesis was tested by following three-step statistical procedures recommended by Baron and Kenny (1986), as shown in Table 4. The results indicated that the significance and coefficient of

the direct effect of GMP adoption on firm competitiveness (in Model 6, $\beta = .44, p < .001$) is reduced when the indirect effect of GMP adoption through organizational legitimacy is included in a total effect model (in Model 2c, $\beta = .24, p < .01$). The results of Sobel test ($t = 6.30, p < 0.001$) further indicate that the reduction is significant. Consequently, the relationship between GMP adoption and firm competitiveness is partially mediated by organizational legitimacy. Thus, the results provided support for Hypothesis 4.

5. Discussion

This study integrates both internal and external perspectives (dynamic capabilities and institutional theory, respectively) to explain factors that contribute to variations in the adoption of GM and the effects of GMPs on competitiveness in emerging economies. Specifically, we offer hypotheses to demonstrate why, using both moderating and

Table 4
Regression results.

Variables	DV = GMP adoption			DV = Legitimacy		DV = Competitiveness		
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8
Firm age (ln)	-.09	-.08	-.07	-.02		-.02	-.06	-.03
Firm size (ln)	.04	.05	.06	.14+	.04	.02	.00	-.01
State-owned	-.08	-.05	-.07	.04	.08	.02	-.01	.00
Private-owned	.06	.05	.04	.12	.07	.10	.08	.07
Region_East	-.19+	-.17+	-.18+	.08	.13	.21+	.13	.17+
Region_West	-.21*	-.15	-.15	-.21+	-.10	.09	.10	.12
Industry development	-.03	-.01	-.01	-.13+	-.09	-.14*	-.11+	-.11+
Machinery	-.06	-.03	-.03	.03	.05	-.08	-.11+	-.10
Chemicals	.11+	.13*	.12*	.05	-.02	.00	.03	.00
Electronics	-.06	-.03	-.04	-.00	.04	.04	.01	.03
Energy	.02	.04	.05	-.01	.00	-.05	-.05	-.05
IT	.10	.12+	.12*	.03	-.02	-.07	-.05	-.06
Institutional support (IS)	.30***	.17*	.14*					
Strategic flexibility (SF)		.28***	.25***					
SF × PS			.12*					
GMP adoption					.55***	.44***		.24**
Legitimacy							.50***	.36***
R ²	.15	.21	.22	.14	.42	.30	.34	.38
ΔR ²		.05***	.01*		.27***	.17***	.21***	.07***
F-value	3.59***	4.81***	4.81***	2.99**	12.52***	6.98***	8.37***	9.03***

Note: Standardized coefficients are reported. N = 272. +p < .10, *p < .05; **p < .01; ***p < .001; two-tailed tests.

mediating approaches, two firms with similar capabilities might adopt GM to different degrees and achieve differential competitiveness improvement with similar green strategies. Empirical results confirm the business ethics perspective that proactive GM can not only improve firm competitiveness, it can also enhance social responsibility (Aguilera-Caracuel et al., 2012; Molina-Azorin et al., 2009).

Our findings contribute to the business ethics literature and GM research in four ways. First, we find that strategic flexibility significantly and positively influences GMP adoption in emerging economies. This finding empirically echoes Dwyer's (2009) and Rugman and Verbeke's (1998) recommendation that future research should examine the flexibility in the process of GM. Additionally, our finding enriches the strategic flexibility literature by suggesting that flexibility is useful in business ethics as well as economics. By dealing more effectively with outcome uncertainty and other difficulties involved in adopting GMPs and mitigating the weakness of resource deficits that are typical of firms in emerging economies (Peng and Luo, 2000), strategic flexibility can help such firms respond proactively and rapidly to changing business environments associated with green issues.

Second, differences between liberal market economies in Western countries and the socialist market economy in China suggest that GMPs are likely to assume different forms in these two institutional contexts (Jamali and Neville, 2011). Controversies exist over the adoption of ethical practices in emerging economies. One view holds that governments in the fast-developing regions of Asia and Latin America may tolerate unethical practices by firms in order to acquire short-term financial outcomes and sustain a global competitive edge (Parry et al., 1998). A second view argues that emerging economies have focused attention on firms' ethics to address social and environmental issues in order to create new markets and global competitive advantages (Jamali and Neville, 2011).

To identify and explain these differences, our study follows Campbell (2007), who called for studies that "pay much more attention to the institutional mechanisms that may influence whether corporations act in socially responsible ways or not" (p. 946). We also borrow insights from institutional theory and examine the role of a key institutional factor (institutional support) in the relationship between strategic flexibility and GMP adoption. Our finding that institutional support plays a positive role in the relationship corresponds with relevant institutional theory frameworks employed by Peng and Luo (2000) and Wright et al. (2005), who contend that institutional support has been viewed as a critical institutional factor that may affect corporate behaviors in emerging economies. This finding supports the second view above, and complements Menguc et al. (2010), who find that in a market in which the concept of environmental responsibility is novel, the government plays an important role in shaping and forming firms' proactive environmental management by enacting government regulations. But our finding is inconsistent with that of Parry et al. (1998), who argue that some fast-developing regions may not advocate ethical practices for fear of losing global competitiveness.

However, differing from other studies that treat institutional support as an independent variable in GMP adoption (e.g., Lin and Ho, 2011), we treat institutional support as a moderator that shapes the effects of firm-level dynamic capabilities (e.g., strategic flexibility) on their GMP adoption. This finding suggests that firms in emerging economies may not realize the full potential of their internal capability (i.e., strategic flexibility) in GMP adoption when they lack the required institutional support. Thus, these results suggest that governmental institutional support has a moderating effect on GM adoption in emerging economies. Because emerging economies often experience rapid economic growth and transitions (Zeng et al., 2012), our study is therefore important for understanding the institutional foundations of GM adoption in emerging economies.

Third, we find a positive relationship between GMP adoption and firm competitiveness in the Chinese context. This finding challenges a

common logic according to which firms in developing or emerging economies generally pollute more than their counterparts in developed countries because of lower social pressures and inadequate resources (Lundan, 2004), while agreeing with Rettab et al. (2009), who found in a Dubai study a positive effect of ethical behaviors on firms' outcomes. While some scholars find that governments can help to balance economic growth with environmental protection (Rettab et al., 2009; Lin and Ho, 2011), our finding also suggests that emerging economies such as China that are experiencing rapid economic development increasingly care about and actually can benefit from the long-term environmental and social outcomes of stakeholder-oriented practices (Branco and Rodrigues, 2006).

The last contribution of our study lies in providing a deeper understanding of the role and nature of organizational legitimacy. Earlier research that examines direct influence of GM on firm competitiveness or performance has produced mixed results. Our findings suggest that there is a more complex relationship between GM and firm competitiveness, represented as a reinforcing mechanism in the form of organizational legitimacy. This result echoes Menguc et al.'s (2010) expectation of the reinforcing role of legitimacy in the relationship between GMP adoption and economic outcomes. This agrees with Ambec and Lanoie's (2008) argument that stakeholders increasingly see GM as a more socially desirable or suitable corporate behavior. Our study also extends the research of Lin and Ho (2011) on the antecedents of GMP adoption in China, finding that GM indeed can enhance competitiveness by increasing organizational legitimacy. In this respect, our results contribute to institutional theory by empirically confirming the importance of organizational legitimacy in GM-related value creation in emerging economies.

5.1. Managerial implications

Our findings provide some important managerial implications. First, the finding that strategic flexibility as a dynamic capability has a significantly positive influence on GMP adoption suggests that firms in emerging economies should recognize the importance of strategic flexibility in GM. Given the resource deficiency of firms in emerging economies, such firms should develop enough flexibility to enable them to reallocate and readjust existing resources to new uses in changing circumstances. Building such flexibility could make effective development of GM more achievable.

Second, facing increasing environmental crisis, the Chinese government has stipulated some supportive environmental policies that motivate firms to adopt GMPs (Lin and Ho, 2011). Our findings reveal the importance of these policies as a complement to strategic flexibility in GMP adoption. We show firm decision-makers that strategic flexibility, when combined with some institutional support, could help them realize the potential of GM adoption to the greatest extent possible. Therefore, firms in emerging economies should endeavor to obtain supportive policies, such as technology and market support, other preferential policies and procedural conveniences. On the other hand, considering weak enforcement of environmental regulations in emerging economies (Zeng et al., 2012), governments should go beyond instituting legally binding mandates by enacting favorable policies such as voluntary government/industry agreements, government information programs, grants, and subsidies to facilitate GMPs (Berrone and Gomez-Mejia, 2009). Moreover, based on this knowledge, institutional stakeholders such as the international political and business communities may convince governments in emerging economies that there are benefits to integrating ethical issues into policies to mitigate unethical corporate behaviors.

Third, our finding that GMP adoption could improve firm legitimacy and competitiveness will encourage firms in emerging economies to adopt GMPs in spite of the apparent costs. Also, firms that adopt GM should be aware of the importance of organizational legitimacy, as

they may find it difficult to enhance competitiveness significantly without it.

5.2. Limitations and future research directions

The first limitation of our study that we acknowledge concerns the use of flexibility as the sole antecedent of GM. Bansal (2005) argued that, while some firms pursue the rewards of corporate environmental management, others wait until there is less uncertainty, so future research should consider other antecedents to GMP adoption such as strategic orientation, innovativeness. For example, Özen and Küskü (2009) find that firms in developing countries seeking markets in developed countries may adopt more proactive GMPs. Future research should also consider innovativeness as a potential antecedent of GM adoption.

A second limitation pertains to the generalizability of the conclusions. Although this paper applies to an important emerging economy (China), readers should extend these conclusions to other emerging economies with caution. Future research is needed to test the models of GMP adoption in other contexts. On the other hand, the question of generalization pertains to the nature of the relationships we observed in this study. We collected only cross-sectional data on the companies in our sample, so we cannot claim to have demonstrated causality. Moreover, since the antecedents and consequences of GM might vary over time, future research should collect longitudinal data. Also, the subjective measures of the constructs may bias the findings. Although procedural and statistical remedies have been employed, future research should employ multisource data, especially objective data, to obtain more rigorous findings.

Third, we operationalized GMP adoption with six items based primarily on the theoretical arguments of Marcus and Fremeth (2009) and the empirical measurements of Lin and Ho (2011). Since Liu and Anbumozhi (2009) find that the environmental strategies of Chinese companies were oriented to the government's environmental concerns, future research should conduct in-depth case studies to test whether this measure is specific to China (or perhaps emerging economies more generally) or is more universal.

Finally, although political actors in most emerging economies have encouraged ethical initiatives to reduce the negative environmental impacts of rapid economic growth, green-related ethical practices are still viewed as a low priority compared with what has taken place in developed countries (Rettab et al., 2009). Bilgin (2009) calls for more studies on how to balance economic growth and green-related issues, so future research should conduct in-depth case studies to explore how political actors in these countries increase GM adoption and subsequently enhance their global competitiveness.

6. Conclusion

From the perspective of business ethics, this study explores the antecedents and consequences of firms' GMP adoption by combining the dynamic capability literature and institutional theory as the predominant theoretical lens. We expand on previous research by suggesting the need to consider the effects of flexibility in strategic processes for GM adoption as well as the moderating effect of institutional support. Moreover, we advance a richer explanation of the link between GM and firm competitiveness by drawing on organizational legitimacy as a mediator. In the context of emerging economies, we find empirical support for the business ethics perspective that firms can do well while doing good.

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