Strategic motives and performance implications of proactive versus reactive environmental strategies in corporate sustainable development

Ricky Y. K. Chan | Jennifer W. M. Lai | Namwoon Kim

Abstract
This study proposes and empirically tests a model delineating how different environmental motives would affect the practice of proactive and reactive environmental strategies, and ultimately corporate market performance. It also explores the moderating role of competitive intensity for the motive–strategy and strategy–performance relationships. By surveying manufacturing firms operating in the Pearl River Delta region of China, the study has derived several important findings. To summarize, the findings reveal that while performance-based motivation drives the practice of proactive environmental strategy, it curtails the practice of reactive environmental strategy. Conversely, regulation-based motive exerts exactly opposite influences on these two strategies. The findings further highlight that proactive environmental strategy directly enhances corporate market performance, and this enhancing effect will be strengthened as competitive intensity increases. However, reactive environmental strategy is found not to exert any significant direct influence on such performance, and competitive intensity does not moderate this influence too. Last, while competitive intensity does not moderate the positive influence of promotion-based motive on proactive environmental strategy, it strengthens the negative influence of this motive on reactive environmental strategy. These findings furnish several significant academic and practical implications for pursuing corporate sustainable development.

KEYWORDS
China, corporate market performance, environmental motives, proactive environmental strategy, reactive environmental strategy, sustainable development

1 | INTRODUCTION

Along with worldwide increasing environmental consciousness since the 1960s (Sharma & Aragon-Correa, 2005), firms' strategic approach to coping with environmental requirements has become one of the most critical issues for business practices (e.g., Tatoglu et al., 2020). In...
response to this trend, management scholars subscribing to the natural resource-based view of the firm (referred to as “the NRBV” hereafter) have long advocated that firms can enhance their performance through the pursuit of proactive rather than reactive environmental strategies (Hart, 1995; Russo & Fouts, 1997). Despite the popularity of this academic advocacy, empirical investigations on the performance implications of these two strategies are still limited and mainly confined to manufacturing strategies at the operational level (e.g., Klassen & Whybark, 1999; Sarkis & Cordeiro, 2001). Consequently, the performance implications of different types of environmental strategies at the corporate level are yet to be fully explored. Moreover, findings derived from some of these limited studies also appear inconsistent with the NRBV premise (e.g., Engert et al., 2016; Hamdoun, 2020; Hart & Dowell, 2011), thus casting doubt on if it is really competitively favorable for firms to proactively practice environmental strategies all the time (e.g., Dixon-Fowler et al., 2013; Endrikat et al., 2014; Li et al., 2017).

Moreover, while several previous researchers have put forward different views on the performance implications of both proactive and reactive environmental strategies (respectively referred to as “PES” and “RES” hereafter) (e.g., Aragon-Correa & Rubio-Lopez, 2007; Hart, 1995), systematic research to empirically examine the performance differential between these two strategies to date is still scant (Kim, 2018). Of the limited body of research, two meta-analyses on the relationship between corporate environmental performance and corporate financial performance have touched the issue. For instance, Endrikat et al. (2014) have found that the relationship between these two performance indicators is stronger when firms practice PES rather than RES. On the other hand, another meta-analysis by Dixon-Fowler et al. (2013) has reported that both PES and RES reap similar positive financial returns.

In sum, although previous researchers have, in general, argued for the competitive superiority of pursuing PES over RES, still some have contended that firms could enjoy various strategic benefits by practicing RES due to minimizing environmental investments (Baah et al., 2021) and environment-related legal liabilities (Dixon-Fowler et al., 2013). Besides, it is noted that these researchers have seldom incorporated both PES and RES into the same study to empirically examine their respective impacts on corporate performance (Kim, 2018). This research gap is considered worth bridging especially when judged against the fact that firms in reality often engage in a wide array of environmental activities that comprise both proactive and reactive measures (Baah et al., 2021).

In view of the foregoing research gaps and mixed views in the extant literature, this study includes both PES and RES to simultaneously examine their respective performance implications. According to the environmental strategy literature, the firm's strategic motive is found to determine its strategic responses toward the environment, and ultimately its organizational outcomes (Cater et al., 2009). Drawing upon this, the present study specifically proposes and empirically tests a conceptual model that delineates the key motivational drivers of PES and RES, and their respective impacts on corporate market performance. According to Kandemir et al. (2006), corporate market performance can be conceived as the extent to which a firm achieves success in its businesses, products or markets. It is concerned with how well the firm’s strategies can meet customer requirements so as to create competitive advantages to enhance its market share, customer loyalty, customer acquisition and reputation (Agyabeng-Mensah et al., 2020; Nguyen & Adomako, 2021). Although corporate market performance has long been regarded as a major determinant of firms’ financial viability (Afum et al., 2020; Zhang et al., 2019), the limited body of extant literature on performance implications of environmental strategies has seldom focused on it (e.g., Baah et al., 2020; Chan, 2010). By specifically examining the respective influences of PES and RES on corporate market performance, this study helps rectify previous environmental strategists’ scant research attention to this important performance indicator and thus advance understanding of the relationship between a firm’s pro-environmental strategic practices and its competitive position in the marketplace.

According to the NRBV perspective, PES refers to those corporate efforts that aim at changing or modifying the design of the firm’s operational processes and offerings so as to manage their environmental impacts at source (Hart, 1995). It is conceived as a prevention-oriented approach to environmental management as it is concerned with taking environmental initiatives proactively to prevent the creation of pollutants from the outset (Klassen & Whybark, 1999; Sarkis & Cordeiro, 2001). When practicing PES, the firm has to initiate some fundamental changes in its existing operational processes as well as to nurture a pro-environmental culture among all its employees. More often than not, these changes and culture nurturing initiatives are beyond what is required by environmental regulations (Chan, 2010). On the other hand, RES refers to those corporate efforts that aim at relying on end-of-pipe solutions (e.g., recycling, recovery of wastes) to reduce negative environmental outcomes arising from the firm’s operational processes and offerings (Baah et al., 2021). It is regarded as a control-oriented approach to environmental management as it is concerned with properly treating and disposing of pollutants after their creation via various pollution-control means (Dai et al., 2018; Klassen, 2000). To practice RES, the firm often focuses on meeting rather than exceeding what is required by regulations (Baah et al., 2021). As such, it tends to take a reactive strategic stance to deal with pollutants and wastes only after their creation (Kim, 2018). Facing diverse environmental demands from various stakeholder groups, firms today need to undertake various environmental activities comprising both proactive (i.e., pollution-prevention) and reactive (end-of-pipe control of pollution) measures (Baah et al., 2021; Klassen, 2000). This operational reality highlights the need for firms to practice both PES and RES simultaneously, thus justifying the inclusion of both strategies for investigation in the same study.

Apart from the aforementioned motive-strategy-performance process, this study examines the possible moderating effect of competitive intensity on this process. To this end, competitive intensity is conceptualized as the degree to which firms face competition within their industry due to the presence of numerous competitors and the lack of opportunities for further growth (Andersen et al., 2020; Ang, 2008). Ever since Hart’s (1995) introduction of his seminal NRBV
in the mid-1990s, increasing numbers of environmental researchers have focused on the firm’s internal characteristics when studying corporate greening. This approach is considered far from comprehensive as it undermines the pivotal role that external conditions may play in shaping the pursuit of corporate environmentalism (Dixon-Fowler et al., 2013). Besides, in view of today’s increasingly competitive business environment (Chan & Ma, 2016), it is important to examine the impact of competitive intensity on such pursuit. The incorporation of this important external factor into the analysis would advance understanding of the boundary conditions associated with effective transformation of environmental motives into environmental strategies, and finally favorable organizational outcomes.

Apart from furnishing insights into the boundary conditions, this study makes contributions to the following areas. First, when compared to previous environmental strategy research that often focuses on only PES, this study investigates both PES and RES at the same time. This approach, as mentioned, would greatly enhance the practical significance of the study as firms today often need to undertake various environmental activities that consist of both proactive and reactive elements (e.g., Baah et al., 2021; Kim, 2018). Second, although prior research has tried to identify motives for firms to go green (e.g., Hamann et al., 2017; Tatoglu et al., 2020), it has seldom examined how these motives are related to different types of environmental strategies. However, this yet-to-be-explained relationship is essential for advancing understanding of the mechanism that fosters firms’ strategic responsiveness in dealing with various environmental issues. This understanding would, in turn, help researchers, practitioners and policy makers come up with appropriate facilitating and/or command-and-control measures to direct firms’ environmental practices at both the corporate and national levels.

In the following, a review on the relevant literature and hypothesis development will first be given. After that, the methodology adopted and empirical results will be described. All these will be followed by discussion of the major implications derived from the empirical results and then by concluding remarks.

## 2 | CONCEPTUAL DEVELOPMENT AND HYPOTHESES

### 2.1 | Environmental motives

Prior research has proposed a host of factors that would motivate corporate environmental practices (Laari et al., 2018). According to academic opinions (Fairchild, 2008) and empirical findings (Williamson et al., 2006), these factors, by and large, fall into two categories, performance-based and regulation-based.

As for the performance-oriented motive, it stresses the benefits of creating reputational and competitive advantages for firms through engaging in ecologically responsible activities (Ullah et al., 2021). Researchers subscribing to this motive contend that corporate reputation developed through green practices would help firms appeal their green consumers and investors, and consequently, create market value (Khanifah et al., 2020). Rather than thinking environmental investments as merely fulfilling regulatory obligations, these researchers maintain that such environmental investments would lead to innovation in both final offerings and operational processes, thus enabling firms to gain competitive advantages (Mishra & Yadav, 2021).

Researchers subscribing to regulation-based motive believe that the main driver of corporate environmental activities is the existing regulatory structures that provide minimum standards to govern such activities. In view of the substantial investments involved in ecologically responsible activities, these researchers further contend that firms are not eager to go green unless regulations force them to do so (Kump, 2021). To avoid penalties associated with violating environmental regulations and to minimize environmental investments, firms driven by regulation-based motive are tempted to meet only the regulatory minimum when it comes to corporate sustainable development (Fairchild, 2008). In the following, the relationships among these two environmental motives and the two types of environmental strategies will be discussed.

### 2.2 | Performance-based motive and environmental strategies

As mentioned, performance-based motive is concerned with the potential for ecological responsiveness to improve long-term corporate competitiveness and success (Bansal & Roth, 2000). Firms driven by this motive tend to pay more attention to cost–benefit analysis of ecological responses (Khanifah et al., 2020). Amid heightening global concern about ecological deterioration, these firms believe that meeting environmental demands of salient external stakeholders, in particular, customers and investors, will result in long-term competitive advantages (Walsh & Dodds, 2017). Indeed, this view well echoes the NRBV premise that firms proactively integrating environmental considerations into their strategic planning process would be more apt to develop competitively valuable capabilities (Hart, 1995). With the increasing popularity of the NRBV since its inception in the mid-1990s, academic and practical attention to this motive has also increased correspondingly (Saeidi et al., 2015).

Moreover, firms driven by performance-based motive are likely to see environmental imperatives as market opportunities rather than constraints for their operations (Hirunyawipada & Xiong, 2018). To capitalize on these opportunities, they are prone to benchmark their environmental activities with those of their competitors (Do & Nguyen, 2020) and focus on fundamental product and process changes to achieve corporate sustainability (Potrich et al., 2019). In other words, they are motivated to take a more proactive strategic stance to integrate environmental considerations into their strategic planning and engage in research and development activities to green their offerings and operations (Yang et al., 2019). Rather than feeling satisfied with achieving mere regulatory compliance in a reactive
manner, these firms are keen on proactively managing environmental issues emerged in their operating setting to enhance corporate performance (Baah et al., 2021). To strive for higher performance in the marketplace, they are motivated to invest voluntarily in environmental activities even if some of these activities are not required by laws (Fairchild, 2008). All in all, the foregoing analysis suggests that performance-based motive would exert influences differentially on PES and RES, as delineated in the following hypotheses:

H1: Performance-based motive is positively related to the practice of PES.

H2: Performance-based motive is negatively related to the practice of RES.

2.3 Regulation-based motive and environmental strategies

Firms driven by regulation-based motive for their environmental practices are likely to adopt traditional end-of-pipe solutions to address pollution that already exists (Fairchild, 2008). They often focus on complying with prevailing environmental regulations in order to avoid regulatory risks such as sanctions and litigations (Baah et al., 2021). To balance between the high costs involved in green practices and the regulatory risks associated with environmental violation, these firms try to satisfy regulatory requirements but without making substantial changes in their existing operations (Betts et al., 2015). Consequently, these firms seek to ensure that their ecological responses just meet the regulatory minimum (Liston-Heyes & Brust, 2016).

With the main objective of securing the license to operate, these firms tend to react to external constraints to avoid environmental violation rather than proactively seeking solutions to address environmental issues (Kim, 2018). While paying much less attention to the gains when satisfying regulatory requirements, this motive emphasizes what would happen when failing to satisfy them (Bansal & Roth, 2000). This approach often prompts firms to apply the so-called “not doing more than necessary” logic that focuses on meeting rather than exceeding regulatory standards (Graf & Kock, 2015). Consequently, this motive drives firms to resort to reactive environmental practices that focus on implementing outcome-control strategies to deal with pollutants only after their creation (Chang, 2015). This suggests a positive relationship between regulation-based motive and the practice of RES. Moreover, as these firms focus only on limited decision areas pertinent to environmental compliance, they are unlikely to make voluntary or proactive efforts to address environmental issues not regulated by governing agencies (Banal & Roth, 2000). This further suggests a negative relationship between regulation-based motive and the practice of PES. As such, the following two hypotheses are proposed:

H3: Regulation-based motive is positively related to the practice of RES.

H4: Regulation-based motive is negatively related to the practice of PES.

2.4 Environmental strategies and corporate market performance

The environmental management literature usually makes a distinction between firms that merely aim at meeting the minimum legal requirements in the environmental aspect, and those that implement more proactive environmental practices (e.g., Aragon-Correa et al., 2020; Shah & Soomro, 2021). In addressing the performance differential between PES and RES, previous NRBV researchers have contended that firms’ proactive involvement in pollution-preventive activities can acquire competitively valuable capabilities (e.g., Cortez & Nugroho, 2011; Sarkis & Cordeiro, 2001). These capabilities mainly include firms’ continuous innovations (Chan, 2010) and thus improved ability to serve the ever-growing number of environmentally conscious customers (Connelly et al., 2011) as well as enhanced corporate reputation (Duque-Grises et al., 2020).

Despite this, as the pursuit of PES involves a huge amount of investment, other researchers have reservation about if this strategic pursuit would indeed dampen corporate profitability (e.g., Albertini, 2013; Genc & Benedetto, 2019; Kim, 2018). Among them, some have further subscribed to the “low hanging fruit principle” to argue that while corporate efforts to proactively prevent pollution would enable firms to enjoy initial cost savings from rectifying existing inefficiencies, such savings would become increasingly difficult to realize once the more obvious inefficiencies have been fixed (Ju et al., 2020). Alongside this, some strategists have even contended that firms may achieve better performance based on efficiency if they take a more reactive strategic stance that focuses on end-of-pipe control to just meet the regulatory minimum (Xie et al., 2020). Having considered the respective arguments for the performance superiority of PES (e.g., Hart, 1995; Russo & Fouts, 1997) and RES (e.g., Aragon-Correa & Rubio-Lopez, 2007), this study takes a stance that both strategies would enhance corporate market performance, though to varying degrees.

As regards PES, this study subscribes to the NRBV (Hart, 1995) to infer that firms’ practice of this strategy will facilitate their continuous integration of quality environmental management into their overall strategic planning (Nguyen & Adomako, 2021). The major benefits derived from this integration include improved innovative and technological capabilities to turn out eco-friendly products to appeal today’s increasingly environmentally conscious customers and enhance corporate reputation (Chan, 2010; Chen et al., 2019). Relating specifically to the benefit of enhanced corporate reputation, institutionalists have further maintained that firms practicing PES would enjoy a high level of corporate environmental legitimacy (Bansal & Clelland, 2004). This legitimacy refers to the perception of salient stakeholders that firms’ environmental behaviors are desirable, proper or appropriate. With a high level of corporate environmental legitimacy, these firms are often insulated from their salient stakeholders’ close scrutiny and thus enjoy
higher market acceptance (Chan, 2010; Chan & Ma, 2016). Taken together, all these benefits would boost corporate market performance (Naidoo & Gasparatos, 2018). On this basis, the following hypothesis is developed:

**H5:** PES is positively related to corporate market performance.

On the other hand, the practice of RES is likely to result in relatively lower corporate environmental legitimacy than that of PES. This is because the practice of RES is mainly aimed at satisfying the environmental standards of regulators rather than the often more demanding requirements of other salient external stakeholders (e.g., customers and environmental non-governmental organizations) (Bansal & Clelland, 2004; Chan & Ma, 2016). This perspective seems to suggest that while the practice of RES will help firms avoid regulatory sanctions and minimize legal liabilities (Dixon-Fowler et al., 2013), its enhancing effect on corporate market performance may not be salient as this performance depends much on how customers actually judge the firm’s behaviors (Agyabeng-Mensah et al., 2020).

Despite the foregoing perspective, Neville and Menguc’s (2006) notion of stakeholder multiplicity does highlight the possibility for interactions among stakeholder groups (e.g., regulators, customers) to come up with some shared standards to monitor firms’ behaviors. Alongside this, Pera et al. (2016) have maintained that interactions among stakeholder groups would lead to the co-creation of some commonly acceptable standards to govern corporate activities. Zhang and Yang’s (2016) empirical study on Chinese manufacturing firms has further revealed that the regulatory pressure and customer pressure prompting firms’ to adopt pro-environmental practices are highly correlated ($r = 0.73$). This empirical finding, together with the foregoing literature on stakeholder multiplicity, suggests that while firms practicing RES focus on complying with environmental requirements of regulators, such compliance may still lead to the fulfillment of at least certain environmental expectations of customers. Hence, although RES may not generate as much positive impact on corporate market performance as PES, its enhancing effect on this performance is unlikely to be negligible. On this basis, the following hypothesis is offered for empirical testing:

**H6:** RES is positively related to corporate market performance.

### 2.5 Moderating effect of competitive intensity on the strategy–performance relationship

Competitive intensity refers to an operating setting under which competition is intense due to the presence of numerous rivals and the absence of opportunities for further growth (Auh & Menguc, 2005). It reflects the degree to which firms face competition in their industry (Feng et al., 2019). An industry with a high level of competitive intensity is characterized by fierce price wars and the availability of many similar and thus competing product offerings (Gatignon & Xuereb, 1997). As a major contributor to the hostility of the operating environment (Zahra & Garvis, 2000), competitive intensity has often been treated as a contextual variable that moderates relationships between various elements in the strategic decision-making process (Murray et al., 2011). Information systems researchers have also contended that certain external business conditions including competitive intensity would facilitate or impede the process underlying the relationship between strategy and performance (Auger et al., 2003). On this basis, it is proposed here that competitive intensity moderates the strategy–performance relationship.

Strategy and marketing scholars have long contended that under a situation of low competitive intensity, a firm may not suffer significant deterioration in performance even if it does not meet customer requirements satisfactorily. This is because customers have to stick to the firm’s offerings anyway due to the lack of alternatives (Cadogan et al., 2003). Conversely, as customers in a market with high competitive intensity are much freer to change their suppliers, a firm that better satisfies customer requirements than its rivals in this market is likely to significantly boost its performance. In other words, when compared with those operating in a market with low competitive intensity, firms in a market with high competitive intensity are likely to enjoy higher performance if they can satisfy customer requirements effectively (Murray et al., 2011). In sum, the foregoing discussion points to the positive moderating effect of competitive intensity on the relationship between the practice of customer-oriented strategies and corporate performance.

Amid rising global environmental concerns, today’s customers are increasingly demanding ecologically responsible production and products from their suppliers (Banerjee et al., 2003). Hence, if firms can proactively practice environmental strategies (PES) to meet their customers’ environmental requirements, it is probable that the positive performance implications derived from this strategic practice would be even more salient when the market is characterized with high rather than low competitive intensity. Despite the plausibility of this inference, it is still worthwhile to consider if high competitive intensity would indeed increase the focal firm’s risk of being imitated by the large number of available competitors, thus undermining the positive impact of its practice of PES on corporate performance.

According to Aragon-Correa and Sharma (2003), the practice of PES is a dynamic capability, which is socially complex, organizationally specific, inimitable, and dependent on specific and identifiable processes. This capability enables the firm to better reconfigure its other resources and capabilities to cope with changes in the operating environment (Eisenhardt & Martin, 2000). Being a dynamic capability that focuses on pollution prevention at source, this strategic practice requires complex integration among administrative, entrepreneurial and engineering dimensions of the firm (Aragon-Correa, 1998), and is thus by nature path-dependent and inimitable (Aragon-Correa & Sharma, 2003). This inimitability should safeguard the focal firm against strategic imitation from its competitors even under the situation of high competitive intensity. On this basis, the following hypothesis is developed:
H7: Competitive intensity positively moderates (strengthens) the positive influence of PES on corporate market performance.

On the other hand, since the practice of RES is driven by specific environmental regulations rather than by managerial discretion (Majumdar & Marcus, 2001), it relies more heavily on standardized pollution-control technologies and processes, and is thus considered to be less socially complex and causally ambiguous than the practice of PES (Aragon-Correa & Sharma, 2003). As such, this reactive strategic practice should be more readily imitable by competitors. After all, as RES focuses only on meeting the minimum regulatory requirements related to environmental protection (Baah et al., 2021), it is logical to expect that most market players in the same industry are competent to practice this strategy if they wish so. In short, the above discussion suggests that as competitive intensity increases, there would be more market players tending to imitate the focal firm’s practice of RES. This increased strategic mimicry would consequently attenuate the positive influence of this practice on corporate market performance. On this basis, the following hypothesis is developed:

H8: Competitive intensity negatively moderates (weakens) the positive influence of RES on corporate market performance.

2.6 | Moderating effect of competitive intensity on the motive–strategy relationship

For the sake of completeness, this study also explores if competitive intensity would moderate those environmental motive–strategy relationships depicted in Figure 1. Given that competitive intensity is concerned with the extent of competition among players in the same market, it is believed that it would not moderate the influence of regulation-based motive on PES and RES as this influence depends much on how the firm is affected by the regulatory rather than competitive conditions when practicing its environmental strategies. On the other, as performance-based motive stresses the performance and competitiveness of the firm in the market, its influence on PES and RES would be more susceptible to changes in competitive conditions (competitive intensity). On this basis, the possible moderating effects of competitive intensity on the influence of performance-based motive on PES and RES are discussed below.

According to the strategic management literature, competitive intensity is an important factor that affects the degree of munificence of the operating environment (Miller & Friesen, 1983). Munificence

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1Post-hoc moderation analyses based on regression were performed to verify this belief. Consistent with the belief, the analyses revealed no significant moderating effect of competitive intensity on the influence of regulation-based motive on PES or RES at \( p < .05 \).
refers to the extent to which the operating environment can support a sustained rate of corporate growth (Aragon-Correa & Sharma, 2003). This growth, in turn, depends much on the amount of resources available in the operating environment for competing firms to secure and then pursue their strategies (Wang et al., 2016). If these resources become scarce, the operating environment will become highly non-munificent or hostile, thus augmenting the difficulty for firms to develop the organizational and managerial processes, structures and capabilities necessary for pursuing their strategies (Mahapatra et al., 2012).

In other words, under the situation of high competitive intensity, there will likely be more competitors in the same marketplace chasing for limited resources of various kinds (e.g., technological, human and financial) to sustain their strategic pursuit. Consequently, firms in such a highly competitive operating environment will need to face more severe resource scarcity, thus undermining their ability to secure the requisite resources to pursue their strategies including those pro-environmental ones (Aragon-Correa & Sharma, 2003). All in all, this analysis suggests the negative moderating effect of competitive intensity on the effectiveness of translating performance-based motive into the practice of PES and RES. On this basis, the following hypotheses are developed:

- **H9**: Competitive intensity negatively moderates (weakens) the positive influence of performance-based motive on PES.

- **H10**: Competitive intensity negatively moderates (strengthens) the negative influence of performance-based motive on RES.

A research model depicting all these hypotheses is further provided in Figure 1 for reference.

### 3 | METHODOLOGY

#### 3.1 | Sampling and data collection

To test the hypotheses, a survey was conducted among manufacturing firms operating in the Pearl River Delta of the Guangdong province, China. While China is now the world's largest exporter (Chan & Ma, 2016), the Pearl River Delta has recently accounted for 9% of its national gross domestic product (Hong Kong Trade Development Council, 2020). It is regarded as a leading industrial center and export processing base for a wide range of products. It has also generated 25% of China's total export values, the largest among all its provinces and municipalities (Hong Kong Trade Development Council, 2020). In short, the Pearl River Delta's rapid economic development, strong export growth and hosting of a large number of manufacturing firms make it an ideal setting for the present investigation.

With the assistance of a domestic research agency, a sampling frame listing all major manufacturing firms in the Pearl River Delta was first compiled. Based on this frame, 500 firms were then randomly selected and approached to participate in this survey. As top management usually plays a vital role in the design of environmental policies (Chan, 2005), chief executive officers (CEOs) constituted the target respondents of the survey. The survey was administered by native, trained interviewers via telephone or other electronic means (e.g., WeChat). After three rounds of follow-ups, a total of 145 usable replies were received. This constituted a response rate of 29% and compared well to previous research on corporate sustainability in China (e.g., Chan, 2010).

#### 3.2 | Measures

Measures employed in the survey were first generated through a thorough literature review. They were then fine-tuned based on inputs from three academics knowledgeable about the topic under investigation and a pre-test with 30 senior executives of manufacturing firms operating in China. English was first used to develop the questionnaire, which was then translated into Chinese to facilitate some native Chinese respondents' comprehension. Its linguistic equivalence was ensured by back-translation (Bhalla & Lin, 1987). Table 1 summarizes all the relevant measurement items for the constructs under investigation and the major literature which was referenced for developing these items.

Since firms' pro-environmental strategic practices and performance may be affected by their size, operating experience and venture type (Chan, 2005), relevant control variables were also included accordingly. Specifically, the survey controlled the effect of size by the natural logarithm of a firm's number of employees (SIZE), and operating experience by its number of years operating in China (EXP). A dummy variable (VENT), was used to denote responding firms' venture type ("0" = domestic firm; "1" = foreign invested firm). In addition, as firms from different industries might vary in pro-environmental activities (Banerjee et al., 2003), this study followed Chan's (2010) approach to compute a pollution index to control for the industry effect (IND). Specifically, three percentages representing the respective shares of waste water, waste gas, and solid wastes produced by each industry were first compiled based on data extracted from the China Statistical Yearbook (2019). The pollution index of each industry was then computed by multiplying the average of these three percentages by 100.

### 4 | FINDINGS

#### 4.1 | Sample profile

Of the 145 responding firms, their average number of employees and years of operation in China were 619.29 and 17.10, respectively. Around 92% of the firms were foreign invested firms (joint or wholly foreign-owned ventures) and the rest were indigenous Chinese firms. Overall, these firms were rather
evenly distributed between light industries (e.g., IT/electronics, plastics, food processing, and textile and apparel) and heavy industries (e.g., industrial machinery, chemicals, and transport equipment).

Potential non-response bias was assessed based on Chan and Ma's (2016) approach, which involved comparing the responses between early and late responding firms. Specifically, firms agreeing to participate upon receiving the first request were compared with those agreeing only upon receiving the last request. The comparison (based on t test or $\chi^2$ test) did not reveal any significant difference at $p < .05$, thus suggesting no serious risk of non-response bias.

### TABLE 1  Description of measures

<table>
<thead>
<tr>
<th>Construct/measures</th>
<th>Referenced literature</th>
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<tbody>
<tr>
<td><strong>Performance-based motive (PBM)</strong></td>
<td>Bansal and Roth (2000); Fairchild (2008)</td>
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<tr>
<td>PBM1: Serve our customers better</td>
<td></td>
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<tr>
<td>PBM2: Improve our corporate reputation</td>
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<td>PBM3: Improve the quality of our products</td>
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<td>PBM4: Attain competitive advantages over our major competitors</td>
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<tr>
<td><strong>Regulation-based motive (RBH)</strong></td>
<td>Bansal and Roth (2000); Fairchild (2008)</td>
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<tr>
<td>RBM1: Comply with existing environmental regulations</td>
<td></td>
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<td>RBM2: Minimize legal risks due to environmental violation</td>
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<td>RBM3: Attain better relations with environmental agencies</td>
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<td>RBM4: Reduce environmental crises</td>
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<tr>
<td><strong>Proactive environmental strategies (PES)</strong></td>
<td>Amores-Salvado et al. (2021); Buysse and Verbeke (2003)</td>
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<tr>
<td>PES1: Development of new technologies aimed at reducing the amount of energy and materials consumed</td>
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<td>PES2: Voluntarily taking initiatives aimed at preventing pollution at source</td>
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<tr>
<td>PES3: Integrating environmental issues into strategic planning</td>
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<tr>
<td>PES4: Development of new technologies to prevent any contaminant and/or toxic emission at source</td>
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<tr>
<td>PES5: Proactively and scientifically assessing the life-cycle impacts of products</td>
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<tr>
<td><strong>Reactive environmental strategies (RES)</strong></td>
<td>Amores-Salvado et al. (2021); Buysse and Verbeke (2003)</td>
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<tr>
<td>RES1: Measures aimed at safely disposing of the waste materials generated during the production process</td>
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<td>RES2: Measures aimed at restoring the environmental damages caused by our firm's activities.</td>
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<tr>
<td>RES3: Measures aimed at controlling any contaminant and/or toxic emission during the production process</td>
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<tr>
<td>RES4: Environmental strategies aimed at complying with standards set by environmental agencies</td>
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<tr>
<td><strong>Corporate market performance (CMP)</strong></td>
<td>Nguyen and Adomako (2021)</td>
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<tr>
<td>CMP1: Achieving customer satisfaction</td>
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<tr>
<td>CMP2: Providing value for customers</td>
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<tr>
<td>CMP3: Securing desired market share</td>
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<tr>
<td>CMP4: Successfully introducing new products</td>
<td></td>
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<tr>
<td><strong>Competitive intensity (CI)</strong></td>
<td>Jaworski and Kohli (1993)</td>
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<tr>
<td>CI1: Competition in our market is cut-throat.</td>
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<tr>
<td>CI2: There are many promotion wars in our market.</td>
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<tr>
<td>CI3: Anything that one competitor can offer in our market, others can match readily.</td>
<td></td>
</tr>
<tr>
<td>CI4: Price competition is a hallmark of our market.</td>
<td></td>
</tr>
<tr>
<td>CI5: One hears of a new competitive move in our market almost every day</td>
<td></td>
</tr>
</tbody>
</table>

Note: All items are coded by a 7-point scale. Items for CMP are anchored with 1 = “much worse than major rivals” and 7 = “much better than major rivals”; all other items are anchored with 1 = “most disagree” to 7 = “most agree.”
4.2 | Construct reliability and validity

Latent constructs of this study, namely performance-based motive, regulation-based motive, PES, RES, corporate market performance, and competitive intensity were first validated by confirmatory factor analysis (CFA). Initial CFA revealed that two items (RBM4 and PES4) had standardized factor loadings of 0.59 and 0.57, respectively, and were below the threshold of 0.60 (Hair et al., 2006). In view of this, the two items were excluded from the subsequent analysis.

Table 2 below summarizes the finalized CFA results. Overall, the results demonstrated a good fit for the measurement model ($\chi^2(237) = 292.76, p = .01; \text{Tucker–Lewis index (TLI) = 0.98; comparative fit index (CFI) = 0.98; and root mean square error of approximation (RMSEA) = 0.05}$) (Hair et al., 2006). All the constructs also demonstrated satisfactory reliability by having composite reliabilities above 0.70. The results further revealed that all the factor loadings were significant as hypothesized at $p < .05$ and all the average variances extracted (AVEs) exceeded the threshold of 0.50.

**TABLE 2** Results of confirmatory factor analysis

<table>
<thead>
<tr>
<th>Constructs and measures</th>
<th>Standardized factor loading</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Performance-based motive (PBM) ($\alpha = .88$; AVE = 0.66)</strong></td>
<td></td>
</tr>
<tr>
<td>PBM1: Serve our customers better</td>
<td>0.65*</td>
</tr>
<tr>
<td>PBM2: Improve our corporate reputation</td>
<td>0.80*</td>
</tr>
<tr>
<td>PBM3: Improve the quality of our products</td>
<td>0.88*</td>
</tr>
<tr>
<td>PBM4: Attain competitive advantages over our major competitors</td>
<td>0.89*</td>
</tr>
<tr>
<td><strong>Regulation-based motive (RVM) ($\alpha = .79$; AVE = 0.55)</strong></td>
<td></td>
</tr>
<tr>
<td>RBM1: Comply with existing environmental regulations</td>
<td>0.77*</td>
</tr>
<tr>
<td>RBM 2: Minimize legal risks due to environmental violation</td>
<td>0.77*</td>
</tr>
<tr>
<td>RBM 3: Attain better relations with environmental agencies</td>
<td>0.69*</td>
</tr>
<tr>
<td>RBM 4: Reduce environmental crises</td>
<td>Deleted</td>
</tr>
<tr>
<td><strong>Proactive environmental strategies (PES) ($\alpha = .83$; AVE = 0.55)</strong></td>
<td></td>
</tr>
<tr>
<td>PES1: Development of new technologies aimed at reducing the amount of energy and materials consumed</td>
<td>0.74*</td>
</tr>
<tr>
<td>PES2: Voluntarily taking initiatives aimed at preventing pollution at source</td>
<td>0.70*</td>
</tr>
<tr>
<td>PES3: Integrating environmental issues into strategic planning</td>
<td>0.82*</td>
</tr>
<tr>
<td>PES4: Development of new technologies to prevent any contaminant and/or toxic emission at source</td>
<td>Deleted</td>
</tr>
<tr>
<td>PES5: Proactively and scientifically assessing the life-cycle impacts of products</td>
<td>0.69*</td>
</tr>
<tr>
<td><strong>Reactive environmental strategies (RES) ($\alpha = .87$; AVE = 0.63)</strong></td>
<td></td>
</tr>
<tr>
<td>RES1: Measures aimed at safely disposing of the waste materials generated during the production process</td>
<td>0.78*</td>
</tr>
<tr>
<td>RES2: Measures aimed at restoring the environmental damages caused by our firm’s activities.</td>
<td>0.82*</td>
</tr>
<tr>
<td>RES3: Measures aimed at controlling any contaminant and/or toxic emission during the production process</td>
<td>0.79*</td>
</tr>
<tr>
<td>RES4: Environmental strategies aimed at complying with standards set by environmental agencies</td>
<td>0.78*</td>
</tr>
<tr>
<td><strong>Corporate market performance (CMP) ($\alpha = .91$; AVE = 0.71)</strong></td>
<td></td>
</tr>
<tr>
<td>CMP1: Achieving customer satisfaction</td>
<td>0.93*</td>
</tr>
<tr>
<td>CMP2: Providing value for customers</td>
<td>0.88*</td>
</tr>
<tr>
<td>CMP3: Securing desired market share</td>
<td>0.76*</td>
</tr>
<tr>
<td>CMP4: Successfully introducing new products</td>
<td>0.79*</td>
</tr>
<tr>
<td><strong>Competitive intensity (CI) ($\alpha = .96$; AVE = 0.85)</strong></td>
<td></td>
</tr>
<tr>
<td>CI1: Competition in our market is cut-throat.</td>
<td>0.93*</td>
</tr>
<tr>
<td>CI2: There are many promotion wars in our market.</td>
<td>0.88*</td>
</tr>
<tr>
<td>CI3: Anything that one competitor can offer in our market, others can match readily.</td>
<td>0.97*</td>
</tr>
<tr>
<td>CI4: Price competition is a hallmark of our market.</td>
<td>0.96*</td>
</tr>
<tr>
<td>CI5: One hears of a new competitive move in our market almost every day.</td>
<td>0.85*</td>
</tr>
</tbody>
</table>

**Fit statistics of the measurement model:**

$\chi^2(237) = 292.76, p = .01; \text{TLI} = 0.98; \text{CFI} = 0.98; \text{RMSEA} = 0.05$

Note: $\alpha =$ composite reliability; Deleted = RBM4 and PES4 were deleted from the final CFA due to low factor loadings (<0.06).

*Initially fixed at 1.0 for estimation.

*p < .05.
0.50, thus demonstrating satisfactory convergent validity of the constructs (Hair et al., 2006).

Fornell and Larcker’s (1981) suggested approach was also used to assess discriminant validity of the latent constructs. This was done by comparing the squared correlation of each pair of constructs to their respective AVE. The comparison revealed that all the squared correlations were less than the corresponding AVEs, thus suggesting satisfactory discriminant validity of the constructs.

In view of the established validity of the measures, the relevant composite scores to represent all the constructs under investigation were then computed. Table 3 summarizes the relevant descriptive statistics and correlations for all the variables employed for hypothesis testing.

### 4.3 Common method variance bias

Harman’s single-factor test was performed to assess the potential common method variance (CMV) bias (Podsakoff & Organ, 1986). The test revealed that the total variance extracted by one factor was 28.77% and well below the recommended threshold of 50% (Podsakoff et al., 2003). In addition, Lindell and Whitney’s (2001) marker variable technique was employed to provide a more robust test of the CMV bias. Specifically, a variable theoretically unrelated to all the other variables or constructs under study was selected as the marker variable. Following Malhotra et al.’s (2006) procedure, CMV-adjusted correlations between all these other variables were computed by partialing out the effect of the marker variable from the unadjusted correlations, and the t test was subsequently performed to examine if the adjusted and unadjusted correlations were significantly different. In this study, a measurement item aimed at tapping respondents’ degree of agreement on their interpersonal style (“I sometimes irritated by people who ask favors of me”) was selected as the marker variable. This variable had a mean absolute correlation of only 0.05 with all other variables under study. The subsequent performance of t-tests also did not reveal any significant difference between the corresponding CMV-adjusted and unadjusted correlations at p < .05. In short, all the foregoing tests suggested no serious threat of CMV bias in the sample.

### 4.4 Hypothesis testing

Hierarchical regression analysis was used to test the hypotheses. All the aforementioned control variables were incorporated into the regression models throughout the analysis. Interaction terms were employed to test the hypothesized moderating effects. To remove multicollinearity, all these terms were mean-centered according to Aiken and West’s (1991) method. The relevant results are summarized in Table 4.

As regards the test of direct effects (H1–H6), the standardized regression coefficients derived from models 1–3 of the table revealed several important findings. First, model 1 indicated that while performance-based motive positively affected PES ($\beta = .30, p < .01$), the influence of regulation-based motive on the same strategy was negative ($\beta = -.19, p < .05$), thus supporting H1 and H4, respectively. Second, in support of H2 and H3, RES was found to be negatively influenced by promotion-based motive ($\beta = -.29, p < .01$) and positively influenced by regulation-based motive ($\beta = .63, p < .01$) (model 2).

Third, in support of H5, model 3 showed that PES positively affected corporate market performance ($\beta = .22, p < .05$). However, the same model revealed that RES only exerted an insignificant and negative influence on this performance ($\beta = -.16, p > .05$). This
contrasted to the hypothesized positive direct influence put forward in H6, thus rendering no support to this hypothesis.

Last, as regards the test of the hypothesized moderating effects of competitive intensity, models 4 to 6 were employed. Model 4 highlighted that while competitive intensity positively moderated (strengthened) the relationship between PES and corporate market performance ($\beta = .19$, $p < .05$), it did not moderate the relationship between RES and corporate market performance ($\beta = 0.05$, $p > .05$). These results supported H7 but not H8. Model 5 further revealed that competitive intensity did not moderate the positive influence of promotion-based motive on PES ($\beta = 0.05$, $p > .05$), thereby rendering no support for H9. Conversely, in support of H10, Model 6 showed that it negatively moderated (strengthened) the negative influence of promotion-based motive on RES ($\beta = .17$, $p < .05$). Implications of all the foregoing findings are discussed below.

5 | IMPLICATIONS

This study proposes and empirically tests a model delineating how different environmental motives would affect the practice of PES and RES, and ultimately corporate market performance. It also examines the moderating role of competitive intensity for the motive–strategy and strategy–performance relationships. By surveying manufacturing firms operating in the Pearl River Delta region of China, the current study has derived empirical support for most of its hypotheses. To summarize, the findings show that while performance-based motive drives the practice of PES, it curtails the practice of RES. Conversely, regulation-based motive exerts exactly opposite influences on these two strategies. The findings further reveal that PES directly enhances corporate market performance, and this enhancing effect will be strengthened as competitive intensity increases. However, RES is found not to exert any significant direct influence on corporate market performance, and competitive intensity does not moderate this influence too. Last, while competitive intensity does not moderate the positive influence of promotion-based motive on PES, it strengthens the negative influence of this motive on RES. Overall, these findings furnish several significant academic and practical implications.

First, this study enriches the extant environmental strategy literature by uncovering the mechanism underlying the major drivers and corporate outcomes of both PES and RES. While prior research on environmental strategies has often focused only on PES, this study includes both PES and RES, and examines their relationships with```
different strategic motives and their respective impacts on corporate market performance. Such examination helps advance understanding of the strategic process that fosters performance-enhancing pro-environmental strategic practices in the marketplace. By investigating the respective performance implications of both PES and RES simultaneously, the study provides a more comprehensive empirical verification of the proactive superiority premise posited by the NRBV. Moreover, by examining the moderating effect of competitive intensity on the motive—strategy and strategy—performance relationships, this study has complemented the internal focus of most prior research on the NRBV. With the incorporation of the contextual factor of competitive intensity into the analysis, this study offers valuable insights into the boundary conditions that facilitate or debilitate effective translation of environmental motives and strategies into favorable market performance.

Second, as hypothesized, the practice of PES is positively influenced by promotion-based motive but negatively influenced by regulation-based motive. On the other hand, the influences of these two motives on RES are just reverse. These findings highlight the essential roles different stakeholder groups could play in driving the practice of different types of environmental strategy. Specifically, the fact that promotion-based motive would promote PES while deterring RES suggests that the pursuit of corporate reputation and competitive advantages are the major drivers behind proactive environmental practices. Hence, if major stakeholders in the market such as customers and investors would constantly provide positive responses to the firm’s pro-environmental practices, it is likely that this firm would be motivated to cope with environmental issues even more proactively, thus further fostering the practice of PES. From the policy making perspective, the foregoing analysis further suggests that the government should keep educating its citizens to nurture more environmentally conscious customers and investors to influence the firm’s proactive pro-environmental practices.

Relating specifically to the influences of regulation-based motive, although the findings show that this motive is an effective means to drive the practice of RES, it curtails the practice of PES. These findings direct our attention to the relationship between environmental regulations and corporate environmental practices that vary in degrees of proactivity. For regulatory stakeholders (e.g., environmental agencies), they should be aware that excessive use of regulations to crack down on ecologically irresponsible corporate practices may simply encourage firms to focus on those aspects being regulated rather than voluntarily taking a holistic approach to green their entire operating systems. Although it is always important to have some essential environmental regulations in place to ensure that firms would at least fulfill their minimum environmental responsibilities, regulators should be reminded not to over-regulate as this would suffocate firms’ proactivity in managing environmental issues.

Third, PES is found to enhance corporate market performance. As discussed, the major motive that drives the practice of PES is to enhance corporate reputation and firm-level competitive advantages. On this basis, it is logical to see that such proactive practice would result in higher performance in the marketplace. Coupled with the documented empirical evidence on the impact of corporate market performance on corporate financial performance (Afun et al., 2020; Zhang et al., 2019), the present finding suggests that firms practicing PES would eventually improve their financial viability through enhanced corporate reputation and market acceptance. All these highlight the competitive benefits firms would gain by proactively taking environmental issues into their strategic consideration.

Fourth, contrary to the hypothesized positive direct influence of RES on corporate market performance, the present study reveals that RES exerts an insignificant (and negative) influence on such performance. This finding is probably attributed to the fact that customers today may simply perceive corporate compliance with environmental regulations as the minimum social responsibility firms have to fulfill. As such, this compliance may just serve as a hygiene factor whose presence will not necessarily enhance customer satisfaction while its absence will definitely lead to customer dissatisfaction. When compared this finding with the aforementioned positive performance implication of PES, it is evident that PES outperforms RES in terms of enhancing corporate market performance. In short, although RES may still enable firms to achieve cost efficiency through minimizing their environmental investments (Baah et al., 2021), it is far less effective than its proactive counterpart in helping firms enhance customer satisfaction and secure market share.

Fifth, analyses of the moderation effect of competitive intensity on the strategy—performance relationships reveal that while the significant positive influence of PES on corporate market performance will be positively moderated (strengthened) by competitive intensity, the insignificant negative influence of RES on this performance will remain unaltered regardless of the level of competitive intensity. As regards the positive moderating effect of competitive intensity on the relationship between PES and corporate market performance, the present study provides support for Aragon-Correa and Sharma’s (2003) premise that the practice of PES is a dynamic capability which is inimitable and competitively valuable to address the rapidly changing operating environment. With this capability, firms will be more apt to readjust their market positions and activities to better satisfy customers’ various demands (including environmental ones) amidst fierce competition from rivals (Teece, 2007). This explains why firms practicing PES will enjoy even more salient corporate market performance when operating in a market with high (vs. low) competitive intensity.

On the other hand, the negligible role which competitive intensity plays in moderating the (insignificant) influence of RES on corporate market performance may further point to the regulation- rather than market-oriented nature of RES. In other words, as RES mainly responds to regulatory requirements rather than demands of other salient external stakeholders (e.g., customers, investors), its effectiveness/ineffectiveness in influencing corporate market performance may thus remain unchanged regardless of the competitive conditions. All in all, these findings provide support for the hypothesized facilitating role of competitive intensity for translating PES (rather than RES) into firm-level competitive advantages. Given the diminishing
opportunities for firms to acquire competitive advantages over various rivals nowadays (Chan & Ma, 2016), proactively managing the business–environment interface to cater for environmental demands of salient external stakeholders would represent a viable strategic option for firms to pursue sustainable growth.

Last, analyses of the moderation effect of competitive intensity on the relevant motive–strategy relationships further highlight that while competitive intensity exerts an insignificant moderating effect on the positive influence of performance-based motive on PES, it negatively moderates (strengthens) the negative influence of this motive on RES. As regards the finding of the insignificant moderating effect, it should be noted that although high competitive intensity often prevents firms from securing essential resources in the operating environment to pursue their desired strategies, the practice of PES, as a dynamic capability, is organizationally specific, socially complex and path dependent by nature (Aragon-Correa & Sharma, 2003). Due to its organizational specificity and social complexity, such proactive strategic practice often involves corporate initiatives based on managerial discretion and is highly idiosyncratic in details. This strategic practice also calls for the firm’s higher-order learning, shared vision and continuous improvement over time (Hart, 1995). The path dependence of this strategic practice further highlights that its undertaking involves complex cross-functional employee involvement, coordination and integration of the firm’s unique internal resources and capabilities (Russo & Fouts, 1997). In short, the foregoing analysis suggests that while firms have to possess various resources to pursue PES, these resources are indeed organizationally specific and need to be developed internally over time. The idiosyncratic nature of the resources required to pursue PES thus explains why a hostile or intensely competitive operating environment does not impede performance-motivated firms’ effectiveness in undertaking this strategic pursuit.

On the other hand, as regards the negative moderating effect of competitive intensity on the relationship between performance-based motive and RES, is should be noted that the practice of RES often involves the use of some more standardized technologies and operating processes to meet the regulatory minimum (Aragon-Correa et al., 2020). This highlights that firms are more likely to resort to external supply for these requisite resources to practice RES. As competitive intensity increases, these firms will thus find it increasingly difficult to compete with various rivals for the essential scarce resources to undertake their reactive strategic pursuit. The issue of resource scarcity thus explains why performance-motivated firms are even more reluctant to pursue RES in an intensely competitive operating environment.

Taken together, the aforementioned moderation analyses provide useful insights into the facilitating role of competitive intensity for proactive engagement in sustainable corporate development. In other words, as competitive intensity increases, firms aiming at improving their performance will be further discouraged from practicing RES due to the aforementioned issue of resource scarcity. At the same time, they will be further encouraged to pursue PES so as to enjoy the even higher corporate market performance.

6 | CONCLUSION

Through a survey on manufacturing firms in the Pearl River Delta region of China, this study advances understanding of the complex and contingent processes underlying the major antecedents and consequences associated with the practice of proactive and reactive environmental strategies. As mentioned, this study not only enriches the extant literature on the drivers and performance implications of environmental strategies varying in degrees of proactivity, but also provides practitioners and policy makers with useful insights into fine-tuning their current sustainable practices. From the study, it is evident that different strategic motives do constitute different impelling and inhibiting forces for the practice of the two environmental strategies. It is also evident that the practice of proactive rather than reactive environmental strategies will lead to improved corporate market performance and such improvement is even more salient within a highly competitive operating setting. Moreover, it is found that performance-motivated firms will be even more reluctant to pursue reactive environmental strategy within the same setting.

Despite its contributions, this study, like other investigations, has its limitations. First, although it is widely accepted in the environmental strategy literature, the use of cross-sectional survey data in this study inevitably undermines the full establishment of the causal relationships among all the constructs of the proposed model. Employing longitudinal data in future studies will help further verify the model. Second, the fact that this study is confined to manufacturing firms in one of China’s most economically developed regions may restrict the generalizability of the findings. Future research with wider geographic coverage would enhance the comprehensiveness of the investigation and help further establish the external validity of the findings. Similarly, future studies could also verify the proposed model in other developed economies, as well as among other firms operating in a non-manufacturing (e.g., service) setting.

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