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RESEARCH ARTICLE

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Bridging the gap between corporate social responsibility and new green product success: The role of green organizational identity

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Abstract

In this study we explore the relationship between corporate social responsibility and new green product success based on organizational identity theory. The hypotheses are tested on a sample of 150 companies in China. The results indicate that corporate social responsibility positively affects both green organizational identity and green adaptive ability. We also find that green organizational identity and green adaptive ability are positively influences on new green product success. In addition, we find that green organizational identity partially mediates the relationship between corporate social responsibility and green adaptive ability. Moreover, green organizational identity fully mediates the link between corporate social responsibility and new green product success. This means that corporate social responsibility indirectly and positively affects new green product success through green organizational identity. These results suggest that managers should seek to enhance their organizational sense of green identity and improve their organizational green adaptive ability, which will facilitate their firm's sustainable development. The theoretical and practical implications of these findings for environmental policy are also discussed.

KEYWORDS

corporate social responsibility, environmental policy, green adaptive ability, green organizational identity, new green product success, sustainable development

1 | INTRODUCTION

With increasing concern from the public and the Government over environmental issues in China, companies have recognized that environmental issues are important factors that can hinder economic development and firm performance (Chang, 2011; Tseng, Tan, & Siriban-Manalang, 2013). To meet social expectations and address the needs of the public, corporate social responsibility (CSR) can fill gaps in the Government's capabilities and resources. Accordingly, many successful firms have adopted CSR as a sustainability strategy to benefit society and enhance their competitive advantages (Chang, 2016; Marin, Martín, & Rubio, 2017). Thus, firms should consider developing unique products and services by embracing sustainability as a core value (Jones, Reilly, Cox, & Cole, 2017).

As firms face a growing number of national environmental regulations, they have begun to realize that successful green products can help them and the economy move towards environmental sustainability, which has become a powerful competitive weapon in the market (Bernal-Conesa, de Nieves Nieto, & Briones-Peñalver, 2017; Chang & Chen, 2013). Firms in this situation have paid increasingly more attention to redeveloping and redesigning their products into green products and these new green products are able to meet the needs of consumers (Pujari, Peattie, & Wright, 2004). These firms have realized that environmental protection is their social responsibility and developing new green products is important to generate long-term corporate success (Cooper, 1979).

Many studies have focused on the relationship between CSR and the financial performance of firms (Callan & Thomas, 2009; Petrenko, Aime, Ridge, & Hill, 2016), finding that CSR positively affects both performance and the market value of firms (Schadewitz & Niskala, 2010; Wiengarten, Lo, & Lam, 2017). Other studies have explored the influence of CSR on firms' competitiveness. For example, Marin et al.

(2017) found that CSR did not directly influence competitiveness, but innovation and investment fully mediated the relationship between CSR and competitiveness. Recently, studies have found that CSR can positively and significantly affect innovation (Luo & Du, 2015; Martinez-Conesa, Soto-Acosta, & Palacios-Manzano, 2017). Although recent literature has paid attention to the relationship between CSR and innovation, few researchers or empirical studies have explored the relationship between CSR and new green product success. Thus, in this study, we seek to fill this gap by exploring its mechanism through organizational identity theory.

According to organizational identity theory, green organizational identity is defined as "an interpretive scheme about environmental management and protection that members collectively construct to provide meaning to their behaviors" (Albert & Whetten, 1985; Chen, 2011, p. 386). In this study, we propose that green organizational identity plays an important role in this interpretive scheme with respect to environmental issues. Specifically, for firms focused on serious environmental pollution resulting from increased industrial activities, CSR can affect their business models and change their managements' attitudes towards creating a green organizational identity, which can influence the success of new green products. We also apply the novel concept of green adaptive ability, which is defined as "the capability to comply with uncertain environment regulations and environmentalism" (Chang, 2016, p. 66). Green adaptive ability can help a firm respond to future changes and develop green products (Chang, 2016). Organizational green adaptive ability can be enhanced when a firm with a high level of green organizational identity is faced with external environmental pressures. Green adaptive ability can help a firm develop and sustain competitive advantage by creating a pool of specific capabilities, which may contribute to the success of new green products (Lu, Zhou, Bruton, & Li, 2010).

The purpose of this study is to enhance our understanding of the influence of CSR and new green product success and to propose and test a theoretical model. This research is based on three themes. The first explores the relationship between CSR and new green product success. The second determines how CSR influences green organizational identity and green adaptive ability and discusses the link between them. The third explores the meditation mechanism showing how CSR influences new green product success.

By enhancing our understanding of new green product success, this study makes several contributions. We apply organizational identity theory to explore environmental management and the new conception of green organizational identity, which can create a context for responding to environmental trends in ways that enhance an organization's capacity for new green product success. We also explore the reasons why some socially responsible firms enhance their green awareness, which also helps to improve the efficiency of new green product development. In addition, we extend our knowledge of the antecedents and outcomes of green organizational identity and thereby contribute to organizational identity theory. We also discuss green adaptive ability, which plays an important role in new green product success and contributes to green product innovation performance. Finally, we investigate the mechanisms through which CSR influences new green product success based on organizational identity theory, which helps us to explain the mechanisms that improve organizational green innovation. Figure 1 shows the theoretical framework of our study.

This study is organized as follow. First, we review the literature and propose the hypotheses. Thereafter, we describe the research methodology and present the analysis and results of this study. Finally, the theoretical and managerial implications of our findings and possible directions for future research are discussed.

2 | THEORETICAL DEVELOPMENT AND HYPOTHESES

In the face of environmental uncertainty, companies have increasingly paid more attention to their ability to adjust their operational strategies to fit the environment (Kim & Pae, 2007). Further to this objective, Chang (2016) developed the novel concept of green adaptive ability, which refers to the capability to comply with unclear environmental regulations and environmentalism. A firm with green adaptive ability may respond more efficiently to major changes and be more effective at developing green innovation, which then enables it to better respond to environmental challenges (Chang, 2016). Prior research has explored the antecedents of green adaptive ability and found that corporate environmental commitment and green human capital can positively influence green adaptive ability (Chang, 2016). However, we do not know if there are other factors affecting this new construct.

CSR has often been used as a comprehensive term to describe a variety of issues related to a firm's responsibilities (Hillenbrand, Money, & Ghobadian, 2013). CSR not only reflects the strict enforcement of existing legal obligations, but also reflects the voluntary integration of governance and management, strategy, policies and procedures, social environmental concerns, labour and respect for human rights, which can stem from the relationship and transparent dialogues a firm has with its stakeholders. CSR also comes into play when a firm takes responsibility for the consequences and impacts of their actions (Bernal-Conesa et al., 2017). Prior research has focused on how CSR influences firm performance, competitiveness, sustainability and innovation (Briones Peñalver, Bernal Conesa, & de Nieves Nieto, 2017; Mackey, Mackey, & Barney, 2007; Vilanova, Lozano, & Arenas, 2009). However, few studies have explored the relationship between CSR and green adaptive ability.

In this study, we propose that CSR positively affects green adaptive ability. First, according to stakeholder theory, successful firms depend on their ability to manage the links with their stakeholders, which are important tools for generating value (Marin et al., 2017).

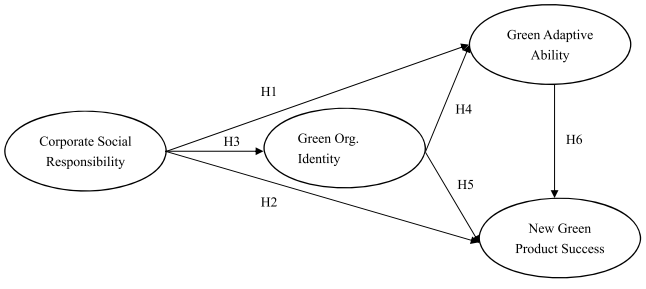

FIGURE 1 The framework for this study

In this situation, CSR plays an important role in the internal and external dialogue with firm's stakeholders (Briones Peñalver et al., 2017). When its stakeholders have a high level of environmental awareness, a firm can use its resources to adjust its abilities and organizational goals. In the process, it can develop a clear environmental vision and invest resources to achieve its environmental goals, thereby enhancing the firm's green adaptive ability. Second, CSR can enhance the identification of new business opportunities due to an increase in green needs and the use of environmental products. In this situation, a firm can develop clear environmental goals and communicate these to their stakeholders and the public. Thus, CSR can help a firm develop, integrate, build and reconfigure its competences to comply with environmental laws (Chen, 2011), which contributes to green adaptive ability. Based on the above theoretical derivation, we propose the following hypothesis:

Hypothesis 1. *CSR is positively related to green adaptive ability.*

In previous research, green products were characterized as having a less negative impact on people and the environment throughout products' lifecycles (Liu et al., 2012; Wong, 2013). In this study, new green product success refers to the following: (i) the greenness of the product in terms of its conformity with both statutory and non-statutory green requirements; (ii) the financial performance of the product and its contribution to the bottom line compared with competitive products; and (iii) the respondents' views on the success of the new products (Paladino, 2007; Wong, 2013). Prior studies have found that corporate environmental commitment and environmental benchmarking are very important to new green product development, and that the success of new green product development in the marketplace is crucial in moving companies towards environmental sustainability (Huang & Wu, 2010). Few researchers, however, have found that green requirement and knowledge-sharing can positively and significantly affect new green product success (Wong, 2013). Thus, we do not know if there are other factors affecting new green product success.

In this study, we argue that CSR can positively affect the new green product success. First, actions related to CSR can help a firm generate environmental capabilities, which can then lead to competitive advantages (Wong, 2013). Because they are faced with environment pressures, firms invest efforts and organizational resources to develop green products and attain sustainable development (Lozano, 2013). Second, CSR practices can improve a firm's reputation with banks and investors and enhance their opportunities to obtain funding (Cheng, Ioannou, & Serafeim, 2014). This increases the probability that new product development will be successful. Third, adopting CSR practices will enhance the flexibility of a firm to create more opportunities to address social problems with innovative products or services, and increase the ability of a firm to attract, retain and motivate staff with new knowledge and information, which would improve the success of new green products (Vásquez-Urriago, Barge-Gil, Rico, & Paraskevopoulou, 2014). From the customer's viewpoint, CSR practices are important methods of achieving customer value. Because an increasing number of consumers are willing to purchase green products from environmentally friendly firms, firms should therefore become aware of the importance and value of creating a green image, and invest more resources in developing new green products to meet customers' needs (Wiktorsson, Bellgran, & Jackson, 2008; Wong, 2013). In addition, according to stakeholder theory, environmental regulations reflect various stakeholders' concerns, which are an important expression of whether a firm is fulfilling its social responsibility to the environment (Eiadat, Kelly, Roche, & Eyadat, 2008). Stakeholder pressure to address environmental issues may cause managers to generate novel and useful ideas for green products and the implementation of green ideas, thus enhancing the probability of the success of green products (Song & Yu, 2018). Therefore, we propose:

Hypothesis 2. *CSR is positively related to new green product success.*

According to organizational identity theory, an organization's identity consists of its collective cognitive framework, which can affect the actions of all its employees (Albert & Whetten, 1985). Thus, organizational identity can influence an employee's thinking and behaviour, and when facing environmental changes, managers can modify their interpretations and reshape organizational identity (Gioia & Thomas, 1996). Once consideration of the environment becomes an integral component of a firm's organizational identity, it is difficult to ignore its environmental impact, and in a sense environmental responsibility is legitimized as it becomes an integral part of the organization's identity (Sharma, Pablo, & Vredenburg, 1999). Based on organizational identity, Chen (2011) developed a new concept called green organizational identity, which takes a broader approach to study the sustainable development of firms. Although prior studies have discussed the antecedents of green organizational identity such as environmental organizational culture, environmental leadership and green innovation strategy, no studies have explored the relationship between CSR and green organizational identity.

We believe that CSR can have a positive effect on green organizational identity. First, prior studies have argued that CSR practices can help firms create environmental awareness that enhances their corporate environmental commitment (Chang, 2016). A firm can develop a clear environmental vision and invest resources in environmental management, which in turn creates an organizational culture that is concerned about environmental issues (Chen, 2011; Henriques & Sadorsky, 1999). An organizational culture with a high level of interest in environmental issues can enhance a firm's environmental awareness concerning green products or services, thus managers are motivated towards integrating its organizational resources and coordinating employee behaviour to reduce a firm's environmental impact, which could subsequently improve green organizational identity.

Second, CSR has many benefits such as a better working environment, closer relationships with stakeholders and the community, and a greater commitment to environmental issues, which can enhance employee participation and confidence (Bernal-Conesa et al., 2017). This stimulates green awareness throughout the organization, and can create core green values and beliefs within firms. These values and benefits could further create a shared vision of environmental management, thereby promoting a green organizational identity. In addition, CSR practices can influence a firm's leadership behaviour, and leadership behaviour can be used to influence what employees

perceive, feel and think about an organization (Hatch & Schultz, 1997). When the top managers of a firm focus on environmental issues, they can shape the values of their employees and make commitments that can stimulate the firm's environmental vision. This can become part of the organization affecting employee behaviour, and helping the firm to address its environmental sustainability challenges, thereby enhancing its green organizational identity (Chang, 2011; Fernández, Junquera, & Ordiz, 2003). Hence, this study proposes the following:

Hypothesis 3. *CSR is positively related to green organizational identity.*

Organizational identity can positively influence an organization's collective interpretations of issues and the actions that are taken in response to these issues (Dutton & Dukerich, 1991). When environmental issues become an important part of an organization's identity, it is more difficult to ignore the challenges of environmentally responsible management (Chen, 2011). Thus, in this situation, the members of the firm pay more attention to integrating, building and reconfiguring organizational competences to comply with environmentalism and environmental laws (Chen, 2011), and these organizational competences contribute to green adaptive ability.

A green organizational identity can motivate a firm to adopt environmental management as a means of enhancing its green image and being viewed as a responsible green organization (Chen & Chang, 2013). Thus, green organizational identity can alter the behaviour of employees and cause them to exert greater efforts towards producing new ideas, approaches and actions, which can enhance the organizational capability to address environmental issues and improve the green adaptive ability, which may help it face uncertainty (Chang & Chen, 2013; Song & Yu, 2018). In addition, when an organization with a high level of green vision shares those values, which are important parts of green organizational identity, it can better integrate green human capital and improve its ability to achieve environmental goals (Chang, 2016). Thus, green organizational identity is beneficial for the development of the capability to deal with environmental regulations and laws, which promotes green adaptive ability. Therefore, we propose the following:

Hypothesis 4. *Green organizational identity is positively related to green adaptive ability.*

The success of a new product is assessed by its greenness, its ability to enhance the financial performance of the firm, and the opinions of its customers regarding the success of the new green product (Wong, 2013). Prior studies have found that green innovation is effective in inducing cost savings, creating new market opportunities and driving revenue growth (Lee & Kim, 2011). In general, when a firm adopts green innovation, it must develop and meet environmental protection goals, which can enhance its organizational competitive advantages (Chen, Lai, & Wen, 2006). Successfully developing new green products is an important method used to improve a firm's level of green innovation and is influenced by organizational identity. When the members of a firm are committed to environmental issues, they are more likely to search for new opportunities (Fernández et al., 2003). Green organizational identity contributes to this process by combining a firm's diverse skill sets and the areas of expertise to further facilitate product innovation (Benet-Martínez, Leu, Lee, & Morris, 2002; Chang & Chen, 2013). When the members of a firm develop green awareness, its employees are inclined to seek solutions and discover meaningful new technologies, which can lead to the development of new green products that can meet the needs of customers. This kind of effort allows a firm to make full use of its internal resources and human capital to enhance the probability of the success of new green products. Thus, we propose the following hypothesis:

Hypothesis 5. *Green organizational identity is positively related to new green product success.*

Due to government pressure and laws, an increasing number of companies have realized the importance of green innovation. This has led them to cultivate their green adaptive ability to develop green products and achieve both their environmental goals and sustainable development (Chang, 2016; Lozano, 2013). The successful development of new products is crucial for firms to promote environmental management and reduce pressure created by both the internal and external environment (Chen et al., 2006). Thus, in this situation, firms pay more attention to environmental management and invest more resources in developing new green products.

To achieve a competitive advantage and address change in the external environmental, firms should adopt appropriate strategies which can be adjusted during times of uncertainty (Ramachandran, 2011). Green adaptive ability is the capability to face environmental uncertainties (Kim & Pae, 2007). By adapting their strategies, firms generate the ability to develop new products that meet both their customers' needs and changing markets. Thus, a green adaptive ability enables firms to resist market fluctuations and develop new green products for meeting the environmental changes (Chang, 2011). In alignment with the statements above, we propose:

Hypothesis 6. *Green adaptive ability is positively related to new green product success.*

3 | METHOD

3.1 | Data collection and sample

In this study, analysis was conducted at the organizational level. We used a questionnaire survey to test our hypotheses and applied a research framework involving several industries in China. China's economic growth has been accompanied by increased energy consumption, which has led to air pollution and an increasing number of poor air-quality days in China's megacities (Chan & Yao, 2008). Now the Chinese Government has begun to pay more attention to green and continuous development. Therefore, China's policies have intensified environmental protection efforts in a variety of industries, especially in the manufacturing and service industries (Song & Yu, 2018).

Data were collected from the Zhejiang and Guangdong provinces in China. MBA students were invited to conduct the survey in the companies there where they worked. In the questionnaires, we

explained the purpose of our investigation and asked questions regarding all the variables, company age, firm size, ownership, and the industry. The respondents were middle managers of higher in their firms, to ensure they were familiar with their firms' strategies and operations. 220 questionnaires were sent out and we received 150 usable samples (a 68.18% response rate). The characteristics of the sample are shown in Table 1.

In this study, we applied a single response from each participating firm and simultaneously collected the data. Therefore, common method variance (CMV) may be a potential factor affecting our results (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). To assess the effect of CMV, we used the Harman's single-factor test, and the results indicated that the first factor did not account for the majority of the covariance in the measures. We concluded that the CMV does not appear to influence our results.

3.2 | Measures

3.2.1 | Corporate social responsibility

We measured CSR using the well-established four-item scale proposed by Marin et al. (2017) and Brown and Dacin (1997). We adopted this four-item instrument to evaluate CSR. All of the survey items were measured using a five-point Likert scale, ranging from 1 = strongly disagree to 5 = strongly agree. One example item was "Our company is highly concerned about the local community"; another was "Our company is highly concerned about the environment." The Cronbach's alpha for CSR was 0.898.

3.2.2 | Green organizational identity

Green organizational identity is a novel conception developed by Chen (2011) from a measure for organizational identity proposed by Gioia and Thomas (1996). In Chen's study (2011), green organizational identity was defined as an interpretive scheme of environmental management and protection that the group members collectively construct to provide meaning for their green behaviour (Chen, 2011). We used six items to assess this conception. One example item was "The company's top managers, middle managers and employees feel that the company has carved out a significant position with respect to environmental management and protection." The Cronbach's alpha for green organizational identity was 0.966.

TABLE 1 Characteristics of the sample (n = 150)

Characteristic	Classification	Frequency (%)
Firm age (years)	< 2	2 (1.3)
	2–5	14 (9.3)
	6–10	18 (12%)
	11–15	24 (16%)
	> 15	92 (61.4%)
Firm size (number of employees)	< 50	12 (8.0)
	50–100	15 (10.0)
	101–200	16 (10.7)
	201–500	24 (16.0)
	501–1000	11 (7.3)
	1001–2000	13 (8.7)
	> 2000	59 (39.3)
Type of firm	State-owned enterprise	56 (37.3)
	Privately owned enterprise	40 (26.7)
	Foreign-funded enterprise	40 (26.7)
	Other	14 (9.3)
Industry	Manufacturing	53 (35.3)
	Service	41 (27.3)
	High and new technology	16 (10.7)
	Other	40 (26.7)

3.2.3 | Green adaptive ability

Green adaptive ability refers to the capability to address uncertain environmental regulations and environmentalism (Chang, 2016), and in this study it was assessed by five items developed by Chang (2016). One example item was "The company can adjust its organizational structure to comply with uncertain environmental regulations and environmentalism"; another item was "The company can adjust its resource investment and allocation to comply with uncertain environmental regulations and environmentalism." The Cronbach's alpha for green adaptive ability was 0.935.

3.2.4 | New green product success

New green product success was measured using five items from the scale developed by Wong (2013), which was built upon questions used in measuring conventional new product success (Wong & Tong, 2012). One example item was "Our new green products are in compliance with green directives"; another item was "Our new green products bring in more revenue than competing products." The Cronbach's alpha for new green product success was 0.941.

3.2.5 | Control variable

Prior research has found that firm age, firm size, ownership and the industry will all influence a firm's green innovation (Chen et al., 2006; Li, 2014). Thus we control these variables. We used an ordinal scale to measure the years since the company was founded, where 1 = less than 2 years, 2 = 2–5 years, 3 = 6–10 years, 4 = 11–15 years, and 5 = more than 15 years. Firm size was measured by the number of employees in the firm, using an ordinal scale where 1 = less than 50 employees, 2 = 50–100 employees, 3 = 101–200 employees, 4 = 201–500 employees, 5 = 501–1000 employees, 6 = 1001–2000 employees, and 7 = more than 2000 employees. We also controlled for the ownership and the industry of each company using dummy variables. These variables included the dummy indicators for state-owned enterprises, private enterprises, foreign-funded enterprises, and other enterprises. The variables for firms' industries included dummy indicators for manufacturing, service, high and new technology, and other industries.

4 | ANALYSIS AND RESULTS

4.1 | Descriptive statistics and correlations

Table 2 presents the mean, standard deviation and correlations of all the variables. CSR was positively related to green adaptive ability and new green product success (r = 0.649, p < 0.01; r = 0.588, p < 0.01, respectively). There is also a positive correlation between CSR and green organizational identity (r = 0.694, p < 0.01). A positive

TABLE 2 Mean, standard deviation and correlations

Variable	Mean	S.D	1	2	3	4	5	6	7	8	9	10	11	12
1 Firm age	4.26	1.07												
2 Firm size	4.88	2.10	.531**											
3 State-owned firm	0.37	0.48	.193*	.300**										
4 Privately owned firm	0.26	0.44	−.318**	−.289**	−.465**					–				
5 Foreign-funded firm	0.26	0.44	.145	.042	−.465**	−.364**								
6 Industry 1	0.35	0.47	.024	−.137	−.282**	.059	.248**							
7 Industry 2	0.27	0.44	−.027	.071	.393**	−.201*	−.167*	-.453**						
8 Industry 3	0.10	0.30	−.146	−.104	−.133	.182*	−.013	-.255**	-.212**					
9 CSR	3.65	0.93	.017	.011	−.051	.009	.134	.027	.135	−.115	(.898)			
10 GOI	3.50	1.01	−.010	.026	−.032	−.029	.158	.039	.055	.020	.694**	(.966)		
11 GAA	3.51	0.94	.071	.021	−.106	.071	.148	-.001	.072	.025	.649**	.659**	(.935)	
12 NGPS	3.68	0.94	.091	.124	.050	−.099	.168*	.095	.068	-.018	.588**	.740**	.609**	(.941)

Note: *$p < 0.05$; **$p < 0.01$; ***$p < 0.001$. Internal consistency reliabilities are given in parentheses.

correlation was also found for the link between green organizational identity and green adaptive ability ($r = 0.659$, $p < 0.01$). In addition, we found that there is a positive relationship between green adaptive ability and new green product success ($r = 0.609$, $p < 0.01$).

4.2 | Reliability and validity

To assess the reliability of all the constructs, we used composite reliability (CR) and Cronbach's alpha coefficients. Table 3 lists the CR for the following variables: CSR, green organizational identity, green adaptive ability and new green product success. The coefficients are 0.900, 0.966, 0.935 and 0.935, respectively. Based on the guidelines proposed by Fornell and Larcker (1981), the reliability ratings of all the variables were higher than 0.7, which means that all variables are acceptable. Cronbach's alpha is another method used to assess reliability. Hair, Black, Babin, Anderson, and Tatham (1998) suggest that the minimum acceptable Cronbach's alpha coefficient is 0.7. In this study, Cronbach's alpha for the constructs are all higher than 0.7, which indicated that the measurements used in this research have acceptable reliability.

In addition, we evaluated the validity of all the variables regardless of their acceptability ratings. Fornell and Larcker (1981) claim that the average variance extracted (AVE) should be higher than 0.50. The AVE values of all the variables are reported in Table 3, which indicates that the convergent validity could be accepted based on the assessment criteria. To access the discriminative validity of the measurements and satisfy the requirement for discriminative validity, the square root of a construct's AVE must be greater than the correlations between each construct and the other constructs in the model (Fornell & Larcker, 1981). The square roots of the AVEs for all the variables are reported in Table 3 and they are all higher than their corresponding figures in Table 2. Thus, the discriminative validity of all the variables measured in this research is acceptable. The above analysis shows that

TABLE 3 Measurement properties

Variable	Item	Loading factor	(CR)	(AVE)	The square root of AVE
Corporate Social Responsibility	CSR1	0.757***	0.900	0.696	0.834
	CSR2	0.904***			
	CSR3	0.900***			
	CSR4	0.764***			
Green Organizational Identity	GOI1	0.893***	0.966	0.826	0.908
	GOI2	0.937***			
	GOI3	0.865***			
	GOI4	0.922***			
	GOI5	0.927***			
	GOI6	0.909***			
Green Adaptive Ability	GAA1	0.938***	0.935	0.743	0.861
	GAA2	0.908***			
	GAA3	0.915***			
	GAA4	0.770***			
	GAA5	0.764***			
New Green Product Success	NGPS1	0.811***	0.935	0.744	0.862
	NGPS2	0.815***			
	NGPS3	0.934***			
	NGPS4	0.878***			
	NGPS5	0.871***			

Note: ***p < 0.001.

all the variables used in this study have adequate reliability and validity.

4.3 | Hypothesis testing

In this section, we used the Structural Equation Modeling (SEM) to verify the empirical results of our research model. The results of this study are presented in Table 4. The measures of overall fit indicated that the fit of the structural model was acceptable (χ^2/df = 1.667, RMSEA = 0.067, CFI = 0.938, IFI = 0.939, TLI = 0.931). We also added or deleted any paths in the framework that did not have a significant improvement in the fit. The residuals of the covariance are small and central near 0. The structural model with the path coefficients and hypotheses is shown in Figure 2.

The results (Table 4) support most of our hypotheses. CSR is positively related to green adaptive ability (β = 0.432, p < 0.001), therefore Hypothesis 1 is supported. Interestingly, CSR did not show a significant relationship with new green product success (β = 0.037, p > 0.05), which indicates that Hypothesis 2 is not supported. The path association between CSR and green organizational identity is highly significant (β = 0.750, p < 0.001), which supports Hypothesis 3. Green organizational identity is positively associated with green adaptive ability (β = 0.351, p < 0.001), therefore Hypothesis 4 is supported. We also found that green organizational identity had positive path associations with new green product success (β = 0.526, p < 0.001), which supports Hypothesis 5. There is a positive and significant relationship between green adaptive ability and new green product success (β = 0.217, p < 0.05), thus Hypothesis 6 is supported. To assess the mediating effect of green organizational identity, we used a set of three requirements recommended by Baron and Kenny (1986). First, the results indicated that CSR was positively related to green adaptive ability (Hypothesis 1). Second, CSR was significantly related to green organizational identity (Hypothesis 3). Third, we found that green organizational identity was positively related to green adaptive ability (Hypothesis 4). Together with Hypotheses 1, 3 and 4, we found that green organizational identity partially mediated the relationship between CSR and green adaptive ability. Thus, we used the same method and found that green organizational identity fully mediated the relationship between CSR and new green product success.

In addition, we found that green organizational identity partially mediated the relationship between CSR and green adaptive ability. We also found that green organizational identity fully mediated the link between CSR and new green product success.

TABLE 4 Results of the structural model

Hypothesis	Proposed effect	Path coefficient	Result
H1	+	0.432***	Supported
H2	+	0.037	Not supported
H3	+	0.750***	Supported
H4	+	0.351***	Supported
H5	+	0.526***	Supported
H6	+	0.217*	Supported

Note: *p < 0.05; **p < 0.01; ***p < 0.001.

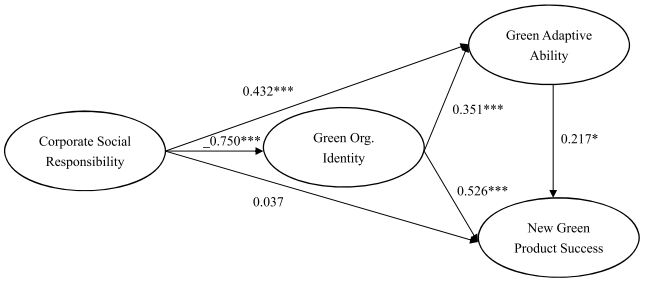

FIGURE 2 The final structural model with path coefficients between the latent constructs

5 | DISCUSSION

In this study, we explored the mechanism underpinning the influence of CSR on new green product success. Our findings suggest that CSR enables new green product success, which allows firms to achieve sustainable development and competitive advantages. Although CSR practices do not necessarily result in a direct improvement to new green product success, a focus on green organizational identity can help firms to improve their awareness of green products, which in turn can stimulate such green innovation. We also used the new conception of green adaptive ability to explain the link between CSR and new green product success. This concept provides a new perspective for firms seeking to enhance their new green product success.

This study makes important theoretical and practical contributions that enhance our understanding of how CSR affects new green product success and the roles of organizational identity and green adaptive ability in the process. There are several interesting findings with both theoretical and practical implications.

5.1 | Contributions to theory

In this research, we first explored the positive effect of CSR on new green product success via green organizational identity and green adaptive ability. Although prior research has investigated the factors associated with new green product success, such as green requirements (Wong, 2013), our findings indicate that CSR is positively related to green adaptive ability, which in turn improves a firm's new green product success. Green adaptive ability is a new construct proposed by Chang (2016), who explored how corporate environmental commitment and green human capital affect green innovation performance through green adaptive ability. However, few studies have proved that a link exists between CSR and green adaptive ability. Our findings demonstrate the importance of this relationship and indicate that firms should pay more attention to their CSR strategy, which can enhance their green adaptive ability and thus increase the probability of developing new green products. This study also provides a new perspective on how CSR influences new green product success through adaptive ability. Thus, our research builds upon recent studies that analyzed how CSR influences innovation and performance in the Spanish agribusiness (Briones Peñalver et al., 2017), and enhances our

understanding of how a firm's CSR strategy influences green adaptive ability.

Second, this study explores the mediation effect of green organizational identity. Our results indicate that green organizational identity mediates the positive relationship between CSR and new green product success. Prior research has found that environmental organizational culture and environmental leadership are important antecedents of green organizational identity, and the outcome of a stronger green organizational identity creates a green competitive advantage (Chen, 2011). However, few studies have considered that a CSR strategy is needed to develop a green organizational identity. This study found that CSR is positively related to green organizational identity, which in turn positively affects new green product success. However, we did not find a direct effect between CSR and new green product success. The results indicate that CSR mainly exerts its influence on new green product success through green organizational identity. In other words, CSR no longer affects the new green product success when green organizational identity is controlled for. Our study indicates that green organizational identity has been a neglected mediating variable, a finding that complements previous studies on this topic, which contribute to why and how companies can achieve growth and environmental sustainability by green product innovation (Dangelico & Pujari, 2010). And this study also can help researchers improve their understanding of the intermediate mechanisms between CSR and new green product success, helping firms to achieve green product innovation development (Hillestad, Xie, & Haugland, 2010; Lee & Kim, 2011).

In addition, our results indicate that there is a positive relationship between green adaptive ability and new green product success. Chang (2016) developed the new conception of green adaptive ability and explored the link between green adaptive ability and green product innovation performance. However, few studies have examined the antecedents and outcomes of green adaptive ability. In this study, we found that green adaptive ability enhances new green product success, indicating that green adaptive ability is a crucial condition that determines the level of new green product innovation. Our results suggest that firms should pay more attention to their environmental ability to promote green product innovation, which can enhance organizational sustainable development and competitive advantage, and contribute to the improvement of green innovation performance through green adaptive ability together with CSR (Chang, 2016).

Finally, this study examined the intermediate mechanisms that explain the relevance of CSR in the Chinese context. Due to pressure from the Government and regulation, firms have realized the importance of CSR in enhancing their image and helping them attain competitive advantages. Our study identified the mechanisms through which CSR affects the firm's new green production success. It also extends prior research on stakeholders and organizational identity theory. When a firm implements a CSR strategy, it should consider its green adaptive ability and green organizational identity.

5.2 | Contributions to practice

This study has several practical implications for managers. First, the results of the mediating model demonstrate that organizational green identity is a relevant element that can explain how CSR enhances a firm's new green product success. Our results indicate that even if CSR does not have a direct effect on new green product success, it can still significantly affect new green product success indirectly through green organizational identity. Therefore, managers should pay more attention to their CSR strategy and use the most appropriate approach to cultivating organizational identity.

Second, our findings suggest that green adaptive ability mediates the relationship between CSR and new green product success. Therefore, firms should ensure that their adaptive ability is appropriate for uncertain environments. In addition, green adaptive ability can highlight the need to restructure a firm's resource allocation, which may enhance their ability to better deploy their resources under different conditions (Chang, 2016). Thus, we suggest that firms should develop and cultivate their adaptive ability in environmental development and meet the requirements and regulations for environmental protection.

Third, China has experienced rapid economic growth while suffering from serious environmental pollution and resource depletion (Zhu, Geng, & Lai, 2010). Currently, the Chinese Government is driving the development of a resource-conserving and environmentally friendly society. Many firms have realized the importance of having a CSR strategy that addresses major environmental challenges and strict new environmental laws. Thus, managers should pay attention to environment policy and adopt a CSR strategy that can facilitate and accelerate the firm's sustainable development. This can enhance a firm's innovation capability and its ability to develop new green products that meet the needs of its customers, which benefits its social, economic and environmentally sustainable development.

In addition, this study has important public policy implications and provides a new way to spearhead environmental protection. With the pressure of external stakeholders and Government laws and regulations, firms should adopt CSR strategies that foster innovation and improve the environment. In turn, this will improve organizational social image, and help firms obtain more resources and opportunities for sustainability development. Furthermore, managers should pay more attention to cultivating green consciousness and enhancing environmental adaptability. In this way, firms can create and implement new ideas, which can then promote new green production innovation, which can help firms achieve corporate competitive advantages.

5.3 | Limitations and future research

This study also has some limitations. First, we used a cross-sectional survey, which made it hard to establish a causal relation between the factors under consideration. Thus, future studies should apply a longitudinal research design to determine how CSR, green organizational identity, green adaptive ability, and new green product success affect each other at different stages of their development.

Second, we used a single response from each participating firm. Therefore, CMV is a potential problem. Harmon's one-factor test was used to evaluate whether CMV is a serious concern, and it was found that this issue was unlikely to seriously affect the results. We recommend future studies collect data on the independent and dependent variables across two time periods or from different information sources for the independent and dependent measures, which would then reduce the possibility of CMV.

Third, our empirical data were obtained from several industries in China. Even if our findings were generalizable regarding new green product success, each of the different industries surveyed had specific characteristics. Thus, further research could focus on a specific industry, for instance the manufacturing industry. In addition, the cultural characteristics of the sample may limit the generalizability of our findings. We suggest that researchers conduct a similar investigation in a Western cultural context to determine the applicability of our results.

Finally, our research indicated that CSR can positively influence green organizational identity and green adaptive ability, which in turn enhances a firm's new green product success. Our findings provide a new perspective on how firms enhance their green product success. We hope our study contributes to relevant and future research as a reference.

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REFERENCES

Albert, S., & Whetten, D. A. (1985). Organizational identity. *Research in Organizational Behavior*, *7*, 263–295.

Baron, R. M., & Kenny, D. A. (1986). The moderator–mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology*, *51*(6), 1173–1182.

Benet-Martínez, V., Leu, J., Lee, F., & Morris, M. W. (2002). Negotiating biculturalism: Cultural frame switching in biculturals with oppositional versus compatible cultural identities. *Journal of Cross-cultural psychology*, *33*(5), 492–516.

Bernal-Conesa, J. A., de Nieves Nieto, C., & Briones-Peñalver, A. J. (2017). CSR Strategy in Technology Companies: Its Influence on Performance, Competitiveness and Sustainability. *Corporate Social Responsibility and Environmental Management*, *24*(2), 96–107.

Briones Peñalver, A. J., Bernal Conesa, J. A., & de Nieves Nieto, C. (2017). Analysis of Corporate Social Responsibility in Spanish Agribusiness and Its Influence on Innovation and Performance. *Corporate Social Responsibility and Environmental Management*, *25*, 182–193.

Brown, T. J., & Dacin, P. A. (1997). The company and the product: Corporate associations and consumer product responses. *The Journal of Marketing*, *61*(1), 68–84.

Callan, S. J., & Thomas, J. M. (2009). Corporate financial performance and corporate social performance: an update and reinvestigation. *Corporate Social Responsibility and Environmental Management*, *16*(2), 61–78.

Chan, C. K., & Yao, X. (2008). Air pollution in mega cities in China. *Atmospheric Environment*, *42*(1), 1–42.

Chang, C. H. (2011). The influence of corporate environmental ethics on competitive advantage: the mediation role of green innovation. *Journal of Business Ethics*, *104*(3), 361–370.

Chang, C. H. (2016). The determinants of green product innovation performance. *Corporate Social Responsibility and Environmental Management*, *23*(2), 65–76.

Chang, C. H., & Chen, Y. S. (2013). Green organizational identity and green innovation. *Management Decision*, *51*(5), 1056–1070.

Chen, Y. S. (2011). Green organizational identity: sources and consequence. *Management Decision*, *49*(3), 384–404.

Chen, Y. S., & Chang, C. H. (2013). The determinants of green product development performance: Green dynamic capabilities, green transformational leadership, and green creativity. *Journal of Business Ethics*, *116*(1), 107–119.

Chen, Y. S., Lai, S. B., & Wen, C. T. (2006). The influence of green innovation performance on corporate advantage in Taiwan. *Journal of Business Ethics*, *67*(4), 331–339.

Cheng, B., Ioannou, I., & Serafeim, G. (2014). Corporate social responsibility and access to finance. *Strategic Management Journal*, *35*(1), 1–23.

Cooper, R. G. (1979). The dimensions of industrial new product success and failure. *The Journal of Marketing*, *43*(3), 93–103.

Dangelico, R. M., & Pujari, D. (2010). Mainstreaming green product innovation: Why and how companies integrate environmental sustainability. *Journal of Business Ethics*, *95*(3), 471–486.

Dutton, J. E., & Dukerich, J. M. (1991). Keeping an eye on the mirror: Image and identity in organizational adaptation. *Academy of Management Journal*, *34*(3), 517–554.

Eiadat, Y., Kelly, A., Roche, F., & Eyadat, H. (2008). Green and competitive? An empirical test of the mediating role of environmental innovation strategy. *Journal of World Business*, *43*(2), 131–145.

Fernández, E., Junquera, B., & Ordiz, M. (2003). Organizational culture and human resources in the environmental issue: a review of the literature. *International Journal of Human Resource Management*, *14*(4), 634–656.

Fornell, C., & Larcker, D. F. (1981). Structural equation models with unobservable variables and measurement error: Algebra and statistics. *Journal of Marketing Research*, *18*(3), 382–388.

Gioia, D. A., & Thomas, J. B. (1996). Identity, image, and issue interpretation: Sensemaking during strategic change in academia. *Administrative Science Quarterly*, *41*(3), 370–403.

Hair, J. F., Black, W. C., Babin, B. J., Anderson, R. E., & Tatham, R. L. (1998). *Multivariate data analysis*. (pp. 207–219). Upper Saddle River, NJ: Prentice Hall.

Hatch, M. J., & Schultz, M. (1997). Relations between organizational culture, identity and image. *European Journal of Marketing*, *31*(5/6), 356–365.

Henriques, I., & Sadorsky, P. (1999). The relationship between environmental commitment and managerial perceptions of stakeholder importance. *Academy of Management Journal*, *42*(1), 87–99.

Hillenbrand, C., Money, K., & Ghobadian, A. (2013). Unpacking the mechanism by which corporate responsibility impacts stakeholder relationships. *British Journal of Management*, *24*(1), 127–146.

Hillestad, T., Xie, C., & Haugland, S. A. (2010). Innovative corporate social responsibility: the founder's role in creating a trustworthy corporate brand through "green innovation". *Journal of Product & Brand Management*, *19*(6), 440–451.

Huang, Y.-C., & Wu, Y.-C. J. (2010). The effects of organizational factors on green new product success: evidence from high-tech industries in Taiwan. *Management Decision*, *48*(10), 1539–1567.

Jones, R. J., Reilly, T. M., Cox, M. Z., & Cole, B. M. (2017). Gender makes a difference: Investigating consumer purchasing behavior and attitudes toward corporate social responsibility policies. *Corporate Social Responsibility and Environmental Management*, *24*(2), 133–144.

Kim, N., & Pae, J. H. (2007). Utilization of new technologies: organizational adaptation to business environments. *Journal of the Academy of Marketing Science*, *35*(2), 259–269.

Lee, K. H., & Kim, J. W. (2011). Integrating suppliers into green product innovation development: an empirical case study in the semiconductor industry. *Business Strategy and the Environment*, *20*(8), 527–538.

Li, Y. (2014). Environmental innovation practices and performance: moderating effect of resource commitment. *Journal of Cleaner Production*, *66*(1), 450–458.

Liu, X., Yang, J., Qu, S., Wang, L., Shishime, T., & Bao, C. (2012). Sustainable production: practices and determinant factors of green supply chain management of Chinese companies. *Business Strategy and the Environment*, *21*(1), 1–16.

Lozano, R. (2013). Are companies planning their organisational changes for corporate sustainability? An analysis of three case studies on resistance to change and their strategies to overcome it. *Corporate Social Responsibility and Environmental Management*, *20*(5), 275–295.

Lu, Y., Zhou, L., Bruton, G., & Li, W. (2010). Capabilities as a mediator linking resources and the international performance of entrepreneurial firms in an emerging economy. *Journal of International Business Studies*, *41*(3), 419–436.

Luo, X., & Du, S. (2015). Exploring the relationship between corporate social responsibility and firm innovation. *Marketing Letters*, *26*(4), 703–714.

Mackey, A., Mackey, T. B., & Barney, J. B. (2007). Corporate social responsibility and firm performance: Investor preferences and corporate strategies. *Academy of Management Review*, *32*(3), 817–835.

Marin, L., Martín, P. J., & Rubio, A. (2017). Doing Good and Different! The Mediation Effect of Innovation and Investment on the Influence of CSR on Competitiveness. *Corporate Social Responsibility and Environmental Management*, *24*(2), 159–171.

Martinez-Conesa, I., Soto-Acosta, P., & Palacios-Manzano, M. (2017). Corporate social responsibility and its effect on innovation and firm performance: An empirical research in SMEs. *Journal of Cleaner Production*, *142*, 2374–2383.

Paladino, A. (2007). Investigating the drivers of innovation and new product success: a comparison of strategic orientations. *Journal of Product Innovation Management*, *24*(6), 534–553.

Petrenko, O. V., Aime, F., Ridge, J., & Hill, A. (2016). Corporate social responsibility or CEO narcissism? CSR motivations and organizational performance. *Strategic Management Journal*, *37*(2), 262–279.

Podsakoff, P. M., MacKenzie, S. B., Lee, J. Y., & Podsakoff, N. P. (2003). Common method biases in behavioral research: a critical review of the literature and recommended remedies. *Journal of Applied Psychology*, *88*(5), 879–903.

Pujari, D., Peattie, K., & Wright, G. (2004). Organizational antecedents of environmental responsiveness in industrial new product development. *Industrial Marketing Management*, *33*(5), 381–391.

Ramachandran, V. (2011). Strategic corporate social responsibility: a 'dynamic capabilities' perspective. *Corporate Social Responsibility and Environmental Management*, *18*(5), 285–293.

Schadewitz, H., & Niskala, M. (2010). Communication via responsibility reporting and its effect on firm value in Finland. *Corporate Social Responsibility and Environmental Management*, *17*(2), 96–106.

Sharma, S., Pablo, A. L., & Vredenburg, H. (1999). Corporate environmental responsiveness strategies: the importance of issue interpretation and organizational context. *The Journal of Applied Behavioral Science*, *35*(1), 87–108.

Song, W., & Yu, H. (2018). Green Innovation Strategy and Green Innovation: The Roles of Green Creativity and Green Organizational Identity. *Corporate Social Responsibility and Environmental Management*, *25*(2), 135–150.

Tseng, M. L., Tan, R. R., & Siriban-Manalang, A. B. (2013). Sustainable consumption and production for Asia: sustainability through green design and practice. *Journal of Cleaner Production*, *40*, 1–5.

Vásquez-Urriago, Á. R., Barge-Gil, A., Rico, A. M., & Paraskevopoulou, E. (2014). The impact of science and technology parks on firms' product innovation: empirical evidence from Spain. *Journal of Evolutionary Economics*, *24*(4), 835–873.

Vilanova, M., Lozano, J. M., & Arenas, D. (2009). Exploring the nature of the relationship between CSR and competitiveness. *Journal of Business Ethics*, *87*(1), 57–69.

Wiengarten, F., Lo, C. K., & Lam, J. Y. (2017). How does sustainability leadership affect firm performance? The choices associated with appointing a chief officer of corporate social responsibility. *Journal of Business Ethics*, *140*(3), 477–493.

Wiktorsson, M., Bellgran, M., & Jackson, M. (2008). Sustainable manufacturing-challenges and possibilities for research and industry from a Swedish perspective. *Manufacturing Systems and Technologies for the New Frontier*, 119–122.

Wong, S. K. S. (2013). Environmental requirements, knowledge sharing and green innovation: empirical evidence from the electronics industry in China. *Business Strategy and the Environment*, *22*(5), 321–338.

Wong, S. K. S., & Tong, C. (2012). The influence of market orientation on new product success. *European Journal of Innovation Management*, *15*(1), 99–121.

Zhu, Q., Geng, Y., & Lai, K. H. (2010). Circular economy practices among Chinese manufacturers varying in environmental-oriented supply chain cooperation and the performance implications. *Journal of Environmental Management*, *91*(6), 1324–1331.

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