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Linking Environmental Corporate Social Responsibility with Green Innovation Performance: The Mediating Role of Shared Vision Capability and the Moderating Role of Resource Slack

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Abstract: Environmental corporate social responsibility is important for firms to achieve both economic benefits and the sustainable development of firms and the environment, which are of great concern to theorists and practitioners. However, the relationship between environmental corporate social responsibility and green innovation performance is still unclear. To address the research gap, we propose a research model that incorporates the mediating effect of shared vision capability, and the moderating effect of resource slack, to investigate whether and when environmental corporate social responsibility affects green innovation performance. Data were obtained from 351 respondents of Chinese firms through a questionnaire. The results confirmed that environmental corporate social responsibility is positively associated with green innovation performance. The results also confirmed that shared vision capability mediated the environmental corporate social responsibility–green innovation performance link. Resource slack statistically significantly moderated the relationship between environmental corporate social responsibility and green innovation performance. These findings offer novel insight for managers when formulating management policies about environmental corporate social responsibility, shared vision capability, and green innovation performance, which can help enterprises to achieve the goal of sustainable development and promote environmental friendliness in society at large.

Keywords: environmental corporate social responsibility; shared vision capability; resource slack; green innovation performance; green development; resource-based theory

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1. Introduction

As stated in a 2022 report, the Chinese central government will go on improving the environment and promoting green development, ensuring greater harmony between humanity and the natural environment. Moreover, the central government has taken appropriate steps to encourage firms to combine scientific and technological innovation with green development to promote high-quality development [1]. Thus, in recent years, implementing green innovation to eliminate negative impacts on the environment has been seen as a vital source of competitive advantage [2]. Thus, the concept has attracted extensive attention from academic and practical circles [3]. Over the past several years, the public, employees, consumers, and other stakeholders have realized the importance of green innovation to society and the effects of firms' activities on the environment, which has driven more firms to engage in green innovation practices. Green innovation performance is the combination of green process innovation performance and green product innovation performance [4]. Different from traditional innovation performance, green innovation performance includes the twofold externalities of beneficial research and development overflow and environmental protection and may strengthen firms' competitive advantage and improve environmental quality [5]. However, due to limited resources and capabilities, a number of Chinese firms still show no great interest in participating in green innovation practices, which prevents them from improving their green innovation performance.

Thus, it is vital to find factors that promote green innovation performance in the area of innovation studies.

Earlier studies have shown that integrating green customers and suppliers makes firms expand their green innovation search scope, which in turn improves green innovation performance [6]. Moreover, including green customers and green suppliers in green innovation can provide firms with more knowledge and expertise about novel ideas and technology that can help to coordinate information exchanges; thereby, green innovation performance can be improved [7]. Due to reciprocal interdependence benefits, firms can integrate green customers and suppliers in green innovation in order to gain their favor and obligation. For the sake of maintaining bilateral relationships, green customers and suppliers can also try to promote firms' green innovation performance [7,8]. Chen et al. [9] posited that green absorptive capacity—the ability to gain, absorb, transform, and use environmental knowledge—enables firms to efficiently integrate external and internal sources of extant and novel environmental knowledge. Moreover, Wang et al. [10] discovered that organizational green learning will encourage firms to gain more new environmental knowledge and improve their green innovation performance. Environmental corporate social responsibility enables firms to shift their focus from economic to environmental issues [11,12]. Thus, environmental corporate social responsibility may be an underlying predictor of green innovation performance. Environmental corporate social responsibility refers to firms' practices that combine environmental concerns with their competitive strategy, operations, commercial activities, and interactions with stakeholders beyond the narrow commercial profit and lawful requirements of the firms [13–15]. Prior studies have discussed the environmental corporate social responsibility outcomes at the firm level [16,17]. A number of studies highlight the impact of environmental corporate social responsibility on financial performance, firm value, and business performance [18–20]. Meanwhile, some studies also have explored the effect of environmental corporate social responsibility on innovation performance. On the basis of stakeholder theory, Bereskin et al. [21] proposed that environmental corporate social responsibility can cater to the expectations of stakeholders, which can help firms construct deeper relationships with their external stakeholders and extract critical resources from the network of relationships. The resources extracted from firms' stakeholders in turn improve firms' innovation performance. Wang and Zhang [22] posited that firms that shoulder environmental corporate social responsibility frequently invest heavily in adjacent fields to fund innovative research and development and product updates, which has a favorable influence on firms' innovation performance. Although the influence of environmental corporate social responsibility on firms' performance has attracted extensive academic attention [23], the environmental corporate social responsibility–green innovation performance relationship is still unclear.

Moreover, the underlying correlation mechanisms between environmental corporate social responsibility and firms' performance have not been illustrated thoroughly in extant research. Social identity theory provides a parsimonious framework that demonstrates how environmental corporate social responsibility may be correlated with green innovation performance. As stated in social identity theory, a perception of harmony between a group of employees can mean they perceive the destiny of the group as their own, which in turn can encourage them to take action to enhance their support for their organization [24,25]. Environmental corporate social responsibility highlights employees' engagement [26] and promotes the firm's vision, mission, and core values, which can easily spread and be shared across firms [27]. When employees perceive that they work for an environmentally responsible firm, they will the take initiative to participate in green product and process innovation via learning novel environmental knowledge and introducing and applying green and novel ideas to practices that aim at reducing energy consumption, preventing pollution, and protecting the environment [28]. Thereby, green innovation performance can be improved. As stated above, the study proposes that shared vision capability can be the mediator in the environmental corporate social responsibility-green innovation

performance relationship, which is aimed at clarifying the correlation mechanism between environmental corporate social responsibility and green innovation performance.

Studies have illustrated that the level of the environmental corporate social responsibility and firms' performance relationship can be divergent because they hinge on firms' resources such as adequate capital, human resource investment, and technology [29,30]. Resource slack can be described as the gap between the extracted resource demands of all groups in a firm and the real demands of the firm [31] and may also refer to the possibility that resources can be rearranged and transferred to achieve organizational goals [32]. The resource-based theory illustrates that the basis of firms' operations is resources and capabilities. Different resources and capabilities are critical for firms to maintain a sustainable competitive edge [33]. These resources and capabilities are usually of great value, rarity, imperfect imitability, and non-substitutability [34]. Firms with adequate slack resources will have great flexibility for the sustainable allocation of resources to engage in environmental corporate social responsibility practices, such as investing in green product research and development, saving energy on manufacturing processes, and preventing environmental pollution innovatively. Thereby, firms' green innovation performance can be promoted. However, due to a lack of slack resources, firms are often short of the financial, human, and technology resources to shoulder environmental responsibility, so green innovation performance is less likely to be improved. Furthermore, inadequate slack resources may hinder firms' ability to mobilize the needed resources that should be put into environmental corporate social responsibility practices, resulting in less green innovation performance. Thus, resource slack is thought to be a moderator in the environmental corporate social responsibility–green innovation performance relationship. It must be understood in order to clarify the boundary conditions of the effect of environmental corporate social responsibility on green innovation performance and to better understand when environmental corporate social responsibility is more or less related to green innovation performance.

The study is organized into six sections: Section 2 presents the theoretical framework and hypothesis development. Section 3 shows the research methodology and Section 4 reflects the data analysis results. Section 5 is a discussion of the findings. The last section provides the conclusions.

2. Theoretical Framework and Research Hypotheses

The study hypothesizes that there is a positive relationship between environmental corporate social responsibility and green innovation performance. Shared vision capability mediates the environmental corporate social responsibility–green innovation performance relationship. Furthermore, the impact of environmental corporate social responsibility on green innovation performance will be moderated by resource slack. The study illustrates the hypothesized relationships based on social identity theory and resource-based theory.

2.1. The Impact of Environmental Corporate Social Responsibility on Green Innovation Performance

For the sake of improving green innovation performance, a number of internal and external stakeholders are often engaged in green innovation [35]. In this study, green innovation performance can be described as performance related to innovations that a firm implements in association with green products and processes, embracing technologies that are concerned with reducing energy consumption, protecting the environment, reusing waste, eliminating pollution, green product research and development, and firm environmental management [36,37]. Since green innovation performance can effectively improve the competitive advantage of firms and cater to the needs of constructing an environment-friendly society, the focus of academic and practical attention is how to enhance green innovation performance in the complex and uncertain world [10].

Environmental corporate social responsibility contributes to the enhancement of green innovation performance. Environmental corporate social responsibility represents a firm's voluntary actions to incorporate environmental concerns into its operational activities,

thereby enhancing the association with the firm's interested parties [38]. The construct concentrates on some elements that can help to address the economic and environmental effects surrounding the firm [39]. Indeed, environmental corporate social responsibility shows the environmentally friendly behavior of a firm in society and can bring about a good reputation and social admissibility [40].

From the perspective of external stakeholders, customers are becoming more concerned about the environmental effects of their purchases [41]. To satisfy customer demands, firms should strengthen R&D investments to develop green products and ensure that manufacturing processes and product quality meet customers' expectations. Meanwhile, environmental corporate social responsibility can be seen as a signal of a firm's non-opportunistic behavior and long-term green development [42], which can lessen informational asymmetry between shareholders [43]. This may, in turn, provide vital resource supports to green innovation. Moreover, environmental corporate social responsibility actions can be identified by external stakeholders, such as green suppliers, which encourage the firm to construct deeper relationships with them, thereby expanding the firm's green innovation search scope [44]; in turn, external knowledge can be integrated into the firm's internal knowledge pool and improve its green innovation performance [7]. From the perspective of internal stakeholders, as stated above, environmentally responsible firms have a good reputation among stakeholders. Employees who feel that they work for firms with a reputation for innovatively integrating green and novel ideas of energy saving, pollution prevention, and waste reuse into product manufacturing can feel pride in their work, and in turn may take the initiative to get involved in green innovation activities [28], thereby facilitating firms' green innovation performance. Thus, the study develops Hypothesis 1:

Hypothesis 1. *Environmental corporate social responsibility is positively related to green innovation performance.*

2.2. The Mediating Role of Shared Vision Capability

Shared vision capability can be described as a common understanding and identification among a firm's members concerning the firm's vision, mission, and core values; it indicates the developmental direction for the firm in the future [27,45]. It is seen as the basis of firm strategic management because it shows firm members' common aims, overall directions, and practices. Moreover, shared vision capability can help firms improve their learning capabilities and maintain a competitive advantage [46].

Social identity theory holds that the collective values and practices in association with those of a comparable group and the prestige of the group can be vital factors to enhance the tendency to identify with groups [24]. For the sake of developing shared vision capability, members of the firm need to have a collective understanding of the vision, mission, and core values of the firm [47]. On the one hand, environmentally responsible firms are devoted to integrating environmental concerns into a firm's values, operations, and commercial activities, which makes them different from comparable firms. This can help employees remain true to themselves and identify with the firm's visions. On the other hand, environmental corporate social responsibility serves the greater interests of society. Thus, environmentally responsible firms usually have good reputations. When employees feel oneness with prestige firms, they tend to feel pride and gradually discover the meaningfulness of their work [48]. The view that the firm is devoted to improving the environment, preventing pollution, and saving energy can enhance employees' identification with the firm's vision, mission, and core values [49]. Therefore, environmental corporate social responsibility is positively associated with shared vision capability.

Due to the increasing significance of shared vision capability, having an explicit understanding of these shared vision capabilities can also affect a firm's green innovation performance. Shared vision capability often links diverse departments and individual staff to a firm, as it produces a shared understanding of the firm's aims and suitable behaviors to realize them and encourages staff to move towards a shared vision. The empirical

study of O'Reilly and Tushman [50] indicated that a clear shared vision can improve a firm's innovation capability. As stated in social identity theory, employees' identification with an organization can strengthen their support for it. Meanwhile, identifying with an organization influences the outcomes conventionally related to group cooperation and intragroup cohesion [24]. Yang and Huang [51] also proposed that a shared vision can provide an image of a desired future state to employees, which can encourage employees to devote their efforts to the firm's aims such that the firm has better performance in innovation.

When employees of a firm identify with its environmentally responsible vision, mission, and core values, they may take the initiative to develop more environmental knowledge and integrate it, and thereby the knowledge pool can be enriched. The process of knowledge searching, and integration can obviously improve firms' green innovation performance. Moreover, there may be a number of difficulties in introducing and applying green and novel ideas into the manufacturing processes, and employees' strong identification with the common vision will make employees cooperate actively with others and discover opportunities by means of exchanging resources and combination across units to overcome risks and challenges from green innovation. Therefore, green innovation performance can be improved. Thus, Hypothesis 2 is proposed:

Hypothesis 2. *Shared vision capability mediates the environmental corporate social responsibility–green innovation performance relationship.*

2.3. The Moderating Role of Resource Slack

Enough support from organizational resources, e.g., adequate financial, human, and material resources, is critical to environmental corporate social responsibility [31]. Resource slack is potentially available resources that a business can divert or redeploy from its operations [52]. Jiao et al. [53] empirically examined how conducting green practices to shoulder ecological responsibilities can be positively associated with financial performance and found that this relationship is moderated by resource slack. Duque-Grisales and Aguilera-Caracuel [54] also proposed that resource slack provides resources for firms to undertake environmental responsibility that enhances financial performance via strengthening visibility and reputation. Furthermore, some studies show that shouldering environmental corporate social responsibility can encourage firms to find new innovation opportunities. At this time, firms with high levels of slack resources will invest financial and human resources to take advantage of innovation opportunities, and thereby green innovation performance can be improved [31,55]. Therefore, this study explores the idea that resource slack might play a moderating role in the relationship between environmental corporate social responsibility and green innovation performance.

As stated in resource-based theory, sufficiently valuable, rare, imperfectly imitable, and non-substitutable resources can help an organization to obtain a competitive advantage and realize its vision, mission, and strategic goals [34]. Moreover, to cope with internal and external pressures, firms can use slack resources to achieve the goal of strategic adjustment in an era full of instability, uncertainty, complexity, and ambiguity. High levels of slack resources can help firms loosen internal investment constraints, and provide finances, talent, and technology to support projects with long investment return cycles and high risk. Firms with low levels of slack resources must focus their resources on projects with high efficiency and short return cycles [56]. On the one hand, sufficient slack resources provide firms with the flexibility to allocate human, material, and financial resources to engage in green innovation in response to the strategy of environmental corporate social responsibility. Xiao et al. [57] also proposed that high levels of resource slack can decrease resource conflicts and constraints in a firm, so that an environmentally responsible firm can keep investing in environmental development activities, such as introducing and applying green and novel ideas to manufacturing processes. Therefore, green innovation performance can be improved. However, low levels of slack resources mean a firm's capability to

mobilize the necessary resources is limited [29]. Environmentally responsible firms with low levels of slack resources cannot concentrate adequate slack on the improvement of green manufacturing processes, so green innovation performance is less likely to be promoted. On the other hand, green innovation requires a variety of resource inputs, and the investment return cycle is quite long. Thus, green innovation has both risks and benefits. If firms have adequate resource slack, there will be more resources for them to bear risks and achieve green innovation performance in response to a firm's environmentally responsible strategy. Therefore, Hypothesis 3 is developed:

Hypothesis 3. *Resource slack moderates the environmental corporate social responsibility–green innovation performance relationship.*

Figure 1 shows an overview of the research model.

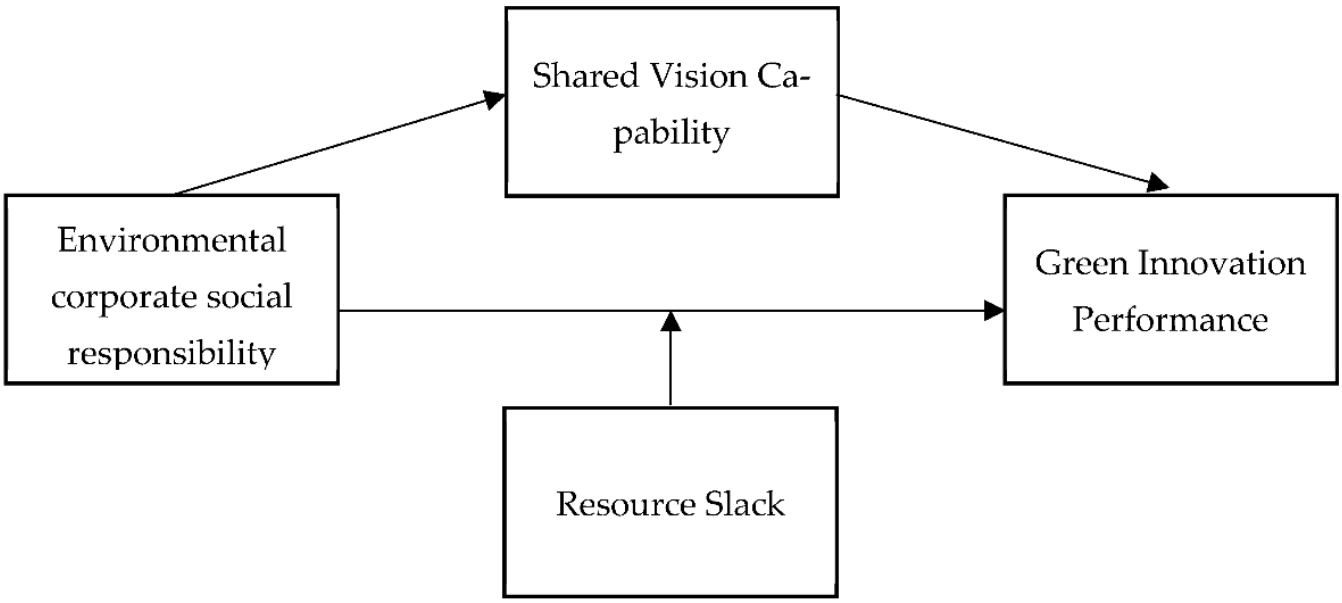

Figure 1. Research model.

3. Research Methodology

3.1. Sample and Data Collection

The study tested the impact of environmental corporate social responsibility on green innovation performance, the mediating role of shared vision capability, and the moderating role of resource slack. Data were collected from a sample of 351 employees from manufacturing firms in China via questionnaires. The data collection period was from March 2022 to June 2022, lasting almost three months. Referring to the study of Daniel et al. [58], we used the single-sample method to explore industry-related environmental corporate social responsibility and green innovation performance. We chose 45 representative firms from the manufacturing industry in China, mainly from Fujian Province, Guangdong Province, Sichuan Province, and Henan Province. Fujian Province, which is the first pilot ecological civilization construction zone in China, is expected to achieve high-quality development by relying on green innovation. As one of the low-carbon pilot provinces, Guangdong Province has implemented a number of measures to call on firms to shoulder environmental responsibility and realize green development. Sichuan Province is a vital industrial center of Western China. Henan reflects the advancement level of the manufacturing industry in Central China to a certain extent.

Ten questionnaires were distributed to each firm. Moreover, we used a probability sampling technique to send the questionnaires to employees. A brief introduction emphasizing the research objective and ensuring the respondents of confidentiality was included

in every questionnaire. The study conducted a time-lagged survey to avoid the potential problems associated with common method variance [59]. On the basis of the hypotheses, we included the responses of employees who replied during the two stages of the survey. At Time 1, participants provided demographic information and rated their environmental corporate social responsibility, resource slack, and shared vision capability. At Time 2 (three weeks afterward), participants needed to evaluate the green innovation performance of the firms they work for. Of 450 questionnaires, we received 372 usable responses from employees, representing an 82.67% return rate. After a rigorous examination of the received instruments, 351 questionnaires were valid, representing 78.00%.

Table 1 gives the sample characteristics: 55.80% of participants were female, and 54.40% of participants were aged between 31 and 40. Over 70.00% of participants had at least a bachelor's degree; 38.70% of participants were junior managers. Moreover, the average job tenure of participants in their firms was 6.39 years. Nearly 60.00% of the firms were private firms; 45.00% of the firms had between 51 and 200 employees, and 40.70% employed over 200 employees; 66.40% of the firms had been established for over 10 years.

Table 1. Sample characteristics of the study (N = 351).

Characteristics	Category	Quantity	Percentage
Gender	Male	155	44.20%
	Female	196	55.80%
Age	30 years old or under	134	38.20%
	31–40 years old	191	54.40%
	41–50 years old	20	5.70%
	Over 50	6	1.70%
Education	Senior high school (polytechnic school) or under	8	2.30%
	Junior college	52	14.80%
	Undergraduate	275	78.30%
	Graduate and above	16	4.60%
Job grade	General staff	114	32.50%
	Junior manager	136	38.70%
	Middle manager	92	26.20%
	Senior manager	9	2.60%
Firm type	Private firm	204	58.10%
	Foreign firm	34	9.70%
	State-owned firm	96	27.40%
	Sino–foreign joint venture	17	4.80%
Firm size	Fewer than 20 employees	11	3.10%
	20–50 employees	39	11.10%
	51–200 employees	158	45.00%
	Over 200 employees	143	40.70%
Firm age	10 years or under	118	33.60%
	Over 10 years	233	66.40%

3.2. Measures

We adopted existing well-supported measurement scales to ensure their reliability and validity. Referring to the back-translation procedures recommended by Brislin [60], we translated English-based measure scales into Chinese. Moreover, in order to evaluate the usability and quality of the measure items, we conducted a pre-test. Four experts on enterprise management and 45 manufacturing employees were invited to participate in a pre-test of the questionnaire. Referring to their specialized and useful feedback, we improved the questionnaire to guarantee that the items were suitable for the working contexts in China. The results of the pre-test demonstrated that Cronbach's Alpha of the questionnaire was greater than the criterion [61], showing that all items were appropriate.

All items were measured on the basis of a seven-point Likert scale, in which 1 stood for "strongly disagree", while 7 stood for "strongly agree". All measure items are shown in Table A1.

3.2.1. Environmental Corporate Social Responsibility (ECSR)

Environmental corporate social responsibility shows a firm's voluntary actions including environmental concerns in its operational activities. The measurement of environmental corporate social responsibility was adapted from Farooq et al. [62]. The scale included four items. A sample item is "Our company implements special programs to minimize its negative impact on the natural environment". Four items generated a Cronbach's Alpha value of 0.871.

3.2.2. Shared Vision Capability (SVC)

Shared vision capability is a common understanding and identification of firms' members concerning the firm's vision, mission, and core values that indicate the developmental direction for the firm in the future. It was measured by six items taken from Luo et al. [27]. A sample item is "I fully understand the meaning of the company's vision and mission and I can fully explain it in detail." Six items generated a Cronbach's Alpha value of 0.895.

3.2.3. Resource Slack (RS)

Resource slack is considered as potentially available resources that a business can di-vert or redeploy from its operations. The study used three items developed by Gao and Yang [29] to measure resource slack and generated a Cronbach's Alpha value of 0.875. A sample item is "Our company can obtain resources at short notice to support new strategic initiatives".

3.2.4. Green Innovation Performance (GIP)

Green innovation performance was the dependent variable in the study and can be described as the success of innovations that a firm implements in association with green products and processes, embracing technologies that help with reducing energy consumption, protecting the environment, reusing waste, eliminating pollution, green product research and development, and firm environmental management. This was operationalized by adopting eight items formulated by Chang et al. [63]. A sample item is "Our company chooses materials that produce the least amount of pollution for conducting the product development or design". These six items generated a Cronbach's Alpha value of 0.934.

3.2.5. Control Variables (Con)

Referring to prior studies [31,64], we took gender, age, education, job grade, and job tenure as control variables. For gender, male was coded 1, and female was coded 2. Age was divided into four groups: 30 years old or under, between 31 and 40 years old, between 41 and 50 years old, and over 50 years old, coded as 1–4, respectively. Education was divided into four groups: senior high school (polytechnic school) or under, junior college, undergraduate, or graduate and above, coded as 1–4, respectively. Job grade was divided into four groups: general staff, junior managers, middle managers, and senior managers, coded as 1–4, respectively. Job tenure was assessed by the number of years. Moreover, we controlled for firm type, size, and age. The firm type was divided into four groups: private, foreign, state-owned, and Sino–foreign joint ventures, coded as 1–4, respectively. The number of employees represented firm size and was divided into four groups: fewer than 20, between 20 and 50, between 51 and 200, and over 200, coded as 1–4, respectively. The number of years that the firm had been established was used to measure age. The study divided firm ages into two groups: 10 years or under and over 10 years, coded as 1 or 2, respectively.

3.3. Statistical Modeling

Based on the aforementioned theoretical analysis and research hypotheses, we tested the relationships between environmental corporate social responsibility, shared vision capability, green innovation performance, and resource slack by constructing models to be tested as follows.

$$GIP = \beta_0 + \beta_1 ECSR + \sum \alpha_i Con_i \ (i = 1, 2, 3, 4, 5, 6, 7, 8) + \varepsilon \quad (1)$$

$$SVC = \beta_0 + \beta_1 ECSR + \sum \alpha_i Con_i \ (i = 1, 2, 3, 4, 5, 6, 7, 8) + \varepsilon \quad (2)$$

$$GIP = \beta_0 + \beta_1 SVC + \sum \alpha_i Con_i \ (i = 1, 2, 3, 4, 5, 6, 7, 8) + \varepsilon \quad (3)$$

$$GIP = \beta_0 + \beta_1 ECSR + \beta_2 SVC + \sum \alpha_i Con_i \ (i = 1, 2, 3, 4, 5, 6, 7, 8) + \varepsilon \quad (4)$$

$$GIP = \beta_0 + \beta_1 ECSR + \beta_2 RS + \beta_3 ECSR \times RS + \sum \alpha_i Con_i \ (i = 1, 2, 3, 4, 5, 6, 7, 8) + \varepsilon \quad (5)$$

Equation (1) was used to test the impact of environmental corporate social responsibility on green innovation performance. Equations (1)–(4) were used to confirm the mediating role of shared vision capability in the relationship between environmental corporate social responsibility and green innovation performance. Equation (5) was used to test the moderating role of resource slack in the relationship between environmental corporate social responsibility and green innovation performance. β_0, β_1, β_2, β_3, and α_i (i = 1, 2, 3, 4, 5, 6, 7, 8) are regression coefficients. ε is a random error term.

3.4. Reliability and Validity

Table 2 shows the results of the reliability and validity analysis of the main constructs via using SPSS v25.0. https://www.ibm.com/products/spss-statistics?lot=5&mhsrc=ibmsearch_a&mhq=spss (accessed on 15 June 2020) As shown in the table, the Composite Reliability values of the four main constructs ranged from 0.757 to 0.881, and Cronbach's Alpha values were between 0.871 and 0.934. Both results indicate that the internal consistency reliability of these measurement scales was acceptable.

Table 2. The reliability and validity analysis results of main constructs.

Constructs	Items	Factor Loading	Cronbach's Alpha	Composite Reliability	Average Variance Extracted	Square Root of Average Variance Extracted
Environmental Corporate Social Responsibility	ECSR1	0.832	0.871	0.878	0.647	0.804
	ECSR2	0.764				
	ECSR3	0.875				
	ECSR4	0.788				
Shared Vision Capability	SVC1	0.777	0.895	0.894	0.589	0.767
	SVC2	0.799				
	SVC3	0.777				
	SVC4	0.759				
	SVC5	0.815				
	SVC6	0.757				
Resource Slack	RS1	0.858	0.875	0.877	0.705	0.840
	RS2	0.816				
	RS3	0.850				
Green Innovation Performance	GIP1	0.836	0.934	0.935	0.707	0.841
	GIP2	0.818				
	GIP3	0.881				
	GIP4	0.854				
	GIP5	0.780				
	GIP6	0.865				

In order to examine the construct validity, we evaluated the convergent validity and discriminant validity. As presented in Table 2, the average variance extracted values of the

four main constructs were higher than 0.50, which meant that there was good convergent validity among the four main constructs in the study. Furthermore, we conducted an exploratory factor analysis. The factor loading of every measure item was significantly associated with its potential factor, and the factor loadings were greater than 0.70, further confirming the convergent validity [65].

Moreover, the study examined the discriminant validity by comparing the square root of the average variance extracted from four main constructs to the inter-construct correlation coefficient. According to Tables 2 and 3, the square root of the average variance extracted was higher than its correlation coefficients with the other main constructs, showing satisfactory discriminant validity [66]. Thus, the measure scales had good reliability and validity.

Table 3. Descriptive statistics and correlations (N = 351).

Variables	M	SD	1	2	3	4	5	6	7	8	9	10	11	12
1. Gender	1.560	0.0497												
2. Age	1.710	0.651	–0.071											
3. Education	2.850	0.514	0.056	–0.138 **										
4. Grade	1.990	0.831	–0.109 *	0.205 **	0.110 *									
5. Tenure	6.390	5.056	–0.149 **	0.647 **	–0.059	0.211 **								
6. Firm type	1.790	1.003	0.093 +	0.046	0.139 **	0.018	0.228 **							
7. Firm size	3.230	0.769	–0.193 **	0.165 **	0.225 **	0.165 **	0.237 **	0.216 **						
8. Firm age	1.660	0.473	–0.098 +	0.211 **	0.159 **	0.027	0.284 **	0.145 **	0.389 **					
9. ESCR	4.650	0.949	0.124 *	–0.009	0.030	0.060	–0.039	–0.070	–0.032	–0.081				
10. SVC	4.060	0.751	0.066	0.034	0.012	0.063	0.027	–0.083	0.041	–0.016	0.361 **			
11. GIP	4.042	1.019	0.029	–0.104 +	0.018	0.030	–0.111 *	–0.069	0.047	–0.081	0.343 **	0.347 **		
12. RS	4.058	1.201	0.014	0.033	0.042	0.122 *	–0.034	–0.085	0.030	0.014	0.354 **	0.338 **	0.394 **	

Note: + $p < 0.10$; * $p < 0.05$; ** $p < 0.01$.

4. Results

4.1. Common Method Bias (CMB)

Since we used employee responses to a questionnaire, the underlying common method bias (CMB) needed to be tested [67]. In order to avoid the risk of common method bias, Harman's single-factor test was adopted to examine whether there was a possible effect of CMB via using SPSS 25.0. The results illustrated that all the main constructs had eigenvalues higher than 1.00 and together accounted for 73.574% of the variance. The first construct accounted for 38.766% of the variance and was below 40.00%. Furthermore, a confirmatory factor analysis was conducted to evaluate CMB using MPLUS 7.0. http://www.statmodel.com/verhistory.shtml (accessed on 17 July 2020) [68]. The fit indices of one single factor model were $\chi 2/df = 17.073$, comparative fit index (CFI) = 0.480, Tucker Lewis index (TLI) = 0.415, standardized root mean square residual (SRMR) = 0.171, and root mean squared error of approximation (RMSEA) = 0.214. These were unacceptable and significantly worse than for other measurement models, illustrating that there were several disconnected factors. Thus, CMB may not be a concern in the study.

4.2. Confirmatory Factor Analysis

A confirmatory factor analysis (CFA) was adopted to ensure that the four main constructs had good discriminant validity using MPLUS 7.0. Following the practice of Keem et al. [69], a four-factor model, two three-factor models, a two-factor model, and a single-factor model were included in the confirmatory factor analysis. Results showed that the four-factor model (environmental corporate social responsibility, shared vision capability, resource slack, and green innovation performance) fit the data well: $\chi^2/df = 3.421$, CFI = 0.925, TLI = 0.912, SRMR = 0.047, and RMSEA = 0.083. For one three-factor model, we loaded environmental corporate social responsibility and green innovation performance indicators on a factor, and the results were $\chi^2/df = 7.936$, CFI = 0.780, TLI = 0.748, SRMR = 0.115, and RMSEA = 0.141. For the other, the study loaded shared vision capability and resource slack indicators on a factor, and the results were $\chi^2/df = 6.730$, CFI = 0.818, TLI = 0.792, SRMR = 0.099, and RMSEA = 0.128. In the two-factor model, we loaded shared vision capability, green innovation performance, and resource slack indicators on

a factor, and the results were $\chi^2/df = 13.099$, CFI = 0.611, TLI = 0.560, SRMR = 0.155, and RMSEA = 0.186. As stated above, for a model in which all four constructs were set to load on a single factor, the results were $\chi^2/df = 17.073$, CFI = 0.480, TLI = 0.415, SRMR = 0.171, RMSEA = 0.214. As the results show, the research model was acceptable and significantly better than the measure models.

4.3. Descriptive Statistics

The means (M), standard deviations (SD), and correlations of all variables are reported in Table 3. The mean values (standard deviations) of environmental corporate social responsibility and green innovation performance were 4.650 (0.949) and 4.042 (1.019), demonstrating that Chinese firms have shouldered environmental corporate social responsibility more actively in recent years. However, there was heterogeneity in terms of green innovation performance among these firms. The mean value of shared vision capability was 4.060, indicating that employees tended to identify with firms that actively shouldered environmental corporate social responsibility. The mean value of resource slack was 4.058 and the standard deviation was 1.201, which showed that there was a difference in resource slack between firms. Moreover, as the results show, environmental corporate social responsibility was positively associated with green innovation performance (r = 0.343, $p < 0.01$) and shared vision capability (r = 0.361, $p < 0.01$). The results also confirm that shared vision capability was significantly related to green innovation performance (r = 0.347, $p < 0.01$). Moreover, resource slack was found to be positively associated with green innovation performance (r = 0.394, $p < 0.01$), and also with shared vision capability at work (r = 0.338, $p < 0.01$).

4.4. Hypothesis Testing

We used a hierarchical regression analysis to examine the proposed hypotheses in SPSS 25.0 [69]. Table 4 shows the results of the hypothesis testing. Firstly, environmental corporate social responsibility had a significantly positive impact on green innovation performance (β = 0.360, $p < 0.01$). Therefore, Hypothesis 1 was confirmed.

Table 4. Hierarchical regression analysis results.

Variables		Shared Vision Capability		Green Innovation Performance					
		Model 1	**Model 2**	**Model 3**	**Model 4**	**Model 5**	**Model 6**	**Model 7**	**Model 8**
Control Variables	Gender	0.154 $^{+}$	0.082	0.089	–0.004	0.018	–0.032	0.005	0.060
	Age	–0.001	–0.004	–0.118	–0.122	–0.117	–0.120	–0.153	–0.147
	Education	0.012	–0.006	–0.015	–0.037	–0.020	–0.035	–0.050	–0.052
	Grade	0.048	0.026	0.057	0.028	0.035	0.019	–0.010	0.007
	Tenure	0.007	0.008	–0.011	–0.011	–0.015	–0.014	–0.005	–0.004
	Firm type	–0.088 *	–0.066	–0.072	–0.044	–0.032	–0.021	–0.025	–0.032
	Firm size	0.077	0.070	0.162 *	0.153 *	0.127	0.129 $^{+}$	0.144^{+}	0.156 *
	Firm age	–0.058	–0.018	–0.178	–0.126	–0.151	–0.119	–0.157	–0.164
Independent Variable	ECSR		0.277 **		0.360 **		0.264 **	0.243 **	0.305 **
Mediator	SVC					0.463 **	0.347 **		
Moderator	RS							0.267 **	0.254 **
Interaction Variable	ECSR × RS								0.126 **
	R^2	0.025	0.143	0.034	0.034	0.147	0.199	0.227	0.257
	ΔR^2	0.025	0.118	0.143	0.109	0.114	0.165	0.193	0.03
	F	1.098	47.069 **	1.499	43.210 **	45.426 **	34.974 **	42.408 **	13.876 **

Note: $^{+}$ $p < 0.10$; * $p < 0.05$; ** $p < 0.01$.

Hypothesis 2 proposed that shared vision capability mediates the relationship between environmental corporate social responsibility and green innovation performance. Referring to the traditional testing methods recommended by Baron and Kenny [70], we evaluated the mediating role of shared vision capability: (1) controlling for gender, age,

education, job grade, job tenure, firm type, firm size, and firm age, and environmental corporate social responsibility positively affected shared vision capability (β = 0.277, $p < 0.01$); (2) environmental corporate social responsibility had a positive impact on green innovation performance (β = 0.360, $p < 0.01$); (c) shared vision capability had a positive influence on green innovation performance (β = 0.463, $p < 0.01$); and (d) after taking shared vision capability into account, the impact of environmental corporate social responsibility on green innovation performance became smaller and significant (β = 0.264, $p < 0.01$), which represented partial mediation. To confirm the robustness of the mediating role of shared vision capability, we used PROCESS, an SPSS macro (95% CI, 1000 bootstrap resamples) to examine it. The results indicated that environmental corporate social responsibility had a positive influence on green innovation performance through shared vision capability (Indirect effect = 0.096, CI (0.048,0.154)), supporting Hypothesis 2.

Hypothesis 3 predicted that firms with high levels of slack resources can strengthen their green innovation performance even more via shouldering environmental corporate social responsibility than firms with low levels of slack resources. As shown in Table 4, the results demonstrated that the interaction between environmental corporate social responsibility and resource slack had a statistically significant and positive impact on green innovation performance (β = 0.126, $p < 0.01$). In order to further demonstrate the moderating role of resource slack, we drew interaction diagrams on the basis of a procedure suggested by Aiken and West [71]. Figure 2 depicts how the positive impact of environmental corporate social responsibility on green innovation performance is stronger with high levels of resource slack (1 SD above the mean) than with low levels of resource slack (1 SD below the mean). Moreover, to test Hypothesis 3, we adopted a simple slope analysis. The simple slope test showed that environmental corporate social responsibility was more strongly correlated to increased green innovation performance with high levels of resource slack (slope = 1.042, t = 4.711, $p < 0.01$) than with low levels of resource slack (slope = 0.665, t = 5.119, $p < 0.01$). Thus, Hypothesis 3 was supported.

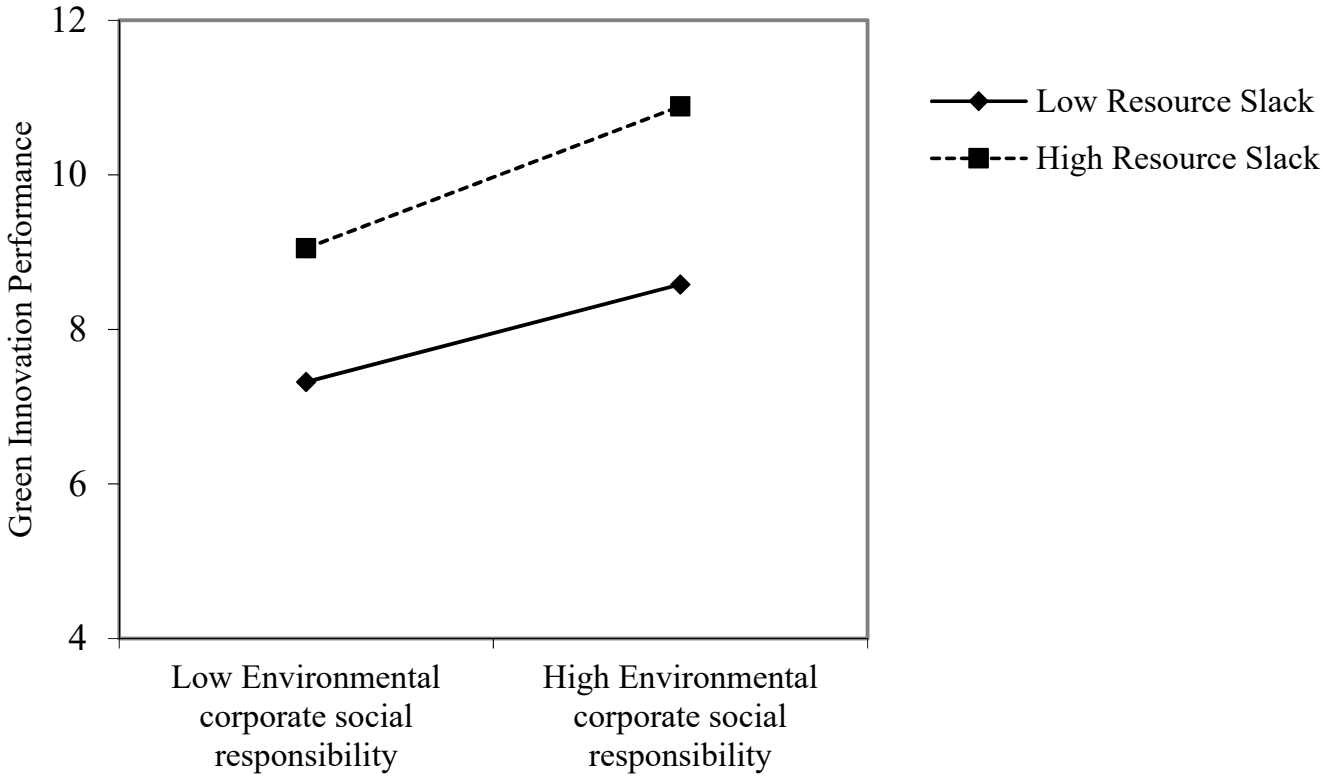

Figure 2. The moderating effect of resource slack.

For the sake of confirming the findings about the moderating role of resource slack, we adopted PROCESS, an SPSS macro (95% CI, 1000 bootstrap resamples), to examine Hypothesis 3. As shown in Table 5, environmental corporate social responsibility had a significant and direct influence on green innovation performance with high levels of resource slack (Effect = 0.408; CI (0.249, 0.567)). However, the moderating effect was smaller with low levels of resource slack (Effect = 0.119; CI (0.004, 0.234)). Hypothesis 3 was supported again.

Table 5. The impact of environmental corporate social responsibility on green innovation performance on different levels of resource slack.

RS	Effect	Boot SE	Boot LCI	Boot UCI
Mean − 1 SD	0.119	0.058	0.004	0.234
Mean	0.201	0.056	0.092	0.311
Mean + 1 SD	0.408	0.081	0.249	0.567

5. Discussion

5.1. Theoretical Implications

Firstly, extant studies indicated that there is a positive impact of corporate social responsibility on firms' outcomes [43,72]. However, few studies have explored the environmental corporate social responsibility–green innovation performance relationship, and the correlation mechanism is still unclear. On the basis of social identity theory, we confirmed that environmental corporate social responsibility is positively associated with green innovation performance via shared vision capability. This finding indicates that a future research direction might be exploring corresponding mechanisms by which corporate social responsibility connects to firms' outcomes [73]. Moreover, there are conflicting views on the impact of corporate social responsibility on innovation outcomes [74,75]. This finding can also help to clarify the inconclusive results of previous studies by suggesting that a mediating role of shared vision capability exists between environmental corporate social responsibility and green innovation performance.

Secondly, most prior studies have confirmed that green customer and supplier integration [7], green absorptive capacity [45], and organizational green learning [10] can be drivers of green innovation performance. The study provides new insight into the antecedents of green innovation performance. We scrutinized the environmental corporate social responsibility–green innovation performance link and the shared vision capability–green innovation performance link in Chinese firms. The results of the data analysis indicate that environmental corporate social responsibility and shared vision capability are positively associated with green innovation performance, which expands the existing research on the antecedents of green innovation performance. The finding also responds to the call of Du et al. [7], who put forward future research directions that deepen the research on the antecedents of green innovation performance.

Finally, we found that resource slack played a positive moderating role in the relationship between environmental corporate social responsibility and green innovation performance. Previous studies showed that resource slack can moderate the corporate social responsibility–firms' outcomes relationship. Alshorman et al. [76] empirically confirmed that resource slack moderated the influence of corporate social responsibility on firm market value by investigating 95 nonfinancial Jordanian firms. Xie [77] found that slack resources can improve the positive link between corporate social responsibility and green technology innovation. Our finding extends the knowledge pool by linking the environmental corporate social responsibility, resource slack, and green innovation performance literature [7,11,76]. Meanwhile, the finding about the moderating role of resource slack verifies the proposition of resource-based theory [29]. High levels of resource slack can provide firms with adequate human, material, and financial resources to innovatively make manufacturing processes greener and lower carbon in response to an environmentally

responsible strategy. Thus, we further clarified the boundary conditions of the effect of environmental corporate social responsibility on green innovation performance, which deepens the research conclusions of Mo et al. [73] and gives insight into the moderating role of resource slack on the corporate social responsibility–firms' outcomes relationship.

5.2. Managerial Implications

The above findings offer some practical implications for managers of firms aiming at gaining competitive advantages via improving green innovation. Firstly, the study indicates that environmental corporate social responsibility can help to promote green innovation performance. The practical value of the result lies in a better understanding of how environmental corporate social responsibility contributes to the improvement of green innovation performance. Firms should actively integrate environmental concerns into their competitive strategy, operations, and commercial activities, which can help them adhere to the national strategy of building an environmentally friendly society and ensure needed resources from internal and external stakeholders, such that green innovation performance can be improved. Moreover, firms' environmentally responsible initiatives can be communicated to the public via brochures and advertisements, which can let the public know that the firm's manufacturing processes and products are green and low carbon. Thereby, green innovation performance can be improved.

Secondly, firms should concentrate on fostering shared vision capabilities when carrying out environmental corporate social responsibility strategies. The study shows that shared vision capability can mediate the impact of environmental corporate social responsibility on green innovation performance. Thus, when a firm is formulating an environmental corporate social responsibility strategy, it needs to pay close attention to how it transmits information to employees. That is to say, the firm should help all members comprehend the firm's environmental responsibility efforts and make them feel oneness and pride with the firm, which can help firms to strengthen their green innovation performance.

Finally, managers can take advantage of the interplay between resource slack and environmental corporate social responsibility to improve their green innovation performance. As stated above, managers should focus not only on increasing available resources but also on slack resource allocation. Therefore, firms should play a more active role in making effective use of resources to strengthen green innovation performance in response to the environmentally responsible strategy. Meanwhile, when firms have a large number of discretionary resources, managers need to concentrate on slackness and inefficiency to prevent abusing slack resources.

6. Conclusions, Limitations, and Directions for Future Research

6.1. Conclusions

In this study, we have investigated the roles of environmental corporate social responsibility, shared vision capability, and resource slack in improving green innovation performance based on a sample of Chinese companies. We found that environmental corporate social responsibility is significantly associated with green innovation performance, and shared vision capability mediates the environmental corporate social responsibility–green innovation performance relationship. Our findings also indicate that, when the level of resource slack is higher, the relationship between environmental corporate social responsibility and green innovation performance can be stronger.

This study makes three major contributions to extant literature and practices. Firstly, it provides a better research model for comprehending both the direct and indirect impacts of environmental corporate social responsibility on green performance. By concentrating on the mediating effect of shared vision capability, which is overlooked in a number of prior studies, we emphasize the collective understanding of a firm's vision to maximize the impact of environmental corporate social responsibility on green innovation performance.

Secondly, the study offers empirical evidence that resource slack has an indirect effect (moderating role) on the link between environmental corporate social responsibility and

green innovation performance. Though the significance of resource slack was acknowledged in prior studies [78,79], its moderating effect in the environmental corporate social responsibility–green innovation performance relationship remains somewhat ambiguous. Our findings expand the extant literature and enhance our understanding of the moderating role of resource slack on the influence of environmental corporate social responsibility on green innovation performance, which offers firms more measures to improve green innovation performance.

Finally, the study empirically examines the impact of environmental corporate social responsibility on green innovation performance and takes shared vision capability as a mediator and resource slack as a moderator in the Chinese context. In recent years, the central government has issued strict environment protection regulations encouraging firms to save energy and reduce emissions in the production process, which is aimed at realizing the goals of peak emissions and carbon neutrality by 2060. Due to the policy background and unique business environment, firms in China can have different performances in environmental corporate social responsibility, shared vision capability, resource slack, and green innovation performance. Therefore, our findings offer a well-timed and discerning contribution to comprehending the role of environmental corporate social responsibility in the Chinese business context.

6.2. Limitations and Directions for Future Research

There are some limitations to the study. Firstly, it explores the causality in the environmental corporate social responsibility–green innovation performance relationship. Although the study tests the direct impact of environmental corporate social responsibility on green innovation performance, the mediating role of shared vision capability and the moderating role of resource slack between them via time-lagged measures for the main variables, there are difficulties in making causal inferences due to the correlational design of the research. The conclusions of the study provide the directionality of the environmental corporate social responsibility–green innovation performance relationship, which is developed by more theoretical than empirical perspectives. Moreover, in the future, a longitudinal study design can be used to explore the complicated relationships between environmental corporate social responsibility, shared vision capability, resource slack, and green innovation performance, which can make the conclusions more precise and generalized.

Secondly, the impact of environmental corporate social responsibility on green innovation performance can be divergent for firms in different cultures. The study relied on a survey of Chinese employees and thus such a cultural effect may exist. Future studies can validate the research in different countries to confirm the generality of the research model.

Thirdly, the study collected self-reported data using a questionnaire. Although we have purposefully obtained primary data, each questionnaire with four main variable measurement scales and a basic characteristics information form is filled out by one employee according to his/her own subjective evaluation, which may involve some deviation. Future studies can adopt public secondary data to test our research model and compare the results with our study in order to strengthen the robustness of the research conclusions.

Finally, the study focuses on the mediating role of shared vision capabilities, and the moderating role of resource slack in the environmental corporate social responsibility–green innovation performance relationship on the basis of social identity theory and resource-based theory. Future studies can explore contextual factors (e.g., green organizational climate and institutional pressures) that serve as moderators. Moreover, the study has bridged the relationship between environmental corporate social responsibility and green innovation performance through shared vision capability. Future studies can also consider dynamic capability, corporate social capital, and green trust as mediators to deepen the study of the environmental corporate social responsibility–green innovation performance relationship. Meanwhile, not only social identity theory and resource-based theory but also resource slack theory can be a theoretical basis for exploring the relationship between

environmental corporate social responsibility and green innovation performance. Therefore, future studies can adopt the resource slack theory to further investigate the environmental corporate social responsibility–green innovation performance link.

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Appendix A

Table A1. Measure items of the questionnaire.

Constructs	Items Numbers	Measurement Items	References
Gender	Control Variable 1	Male Female	Afsar et al. [64]; Liao and Long [31]
Age	Control Variable 2	30 years old or under 31–40 years old 41–50 years old Over 50	
Education	Control Variable 3	Senior high school (polytechnic school) or under Junior college Undergraduate Graduate and above	
Grade	Control Variable 4	General staff Junior managers Middle managers Senior managers	
Tenure	Control Variable 5	Fill-in-the-blank question	
Firms' type	Control Variable 6	Private firms Foreign firms State-owned firms Sino–foreign joint venture	
Firms' size	Control Variable 7	Fewer than 20 employees 20–50 employees 51–200 employees Over 200 employees	
Firms' Age	Control Variable 8	10 years or under Over 10 years	

Table A1. *Cont.*

Constructs	Items Numbers	Measurement Items	References
Environmental Corporate Social Responsibility	ECSR1	Our company participates in activities which aim to protect and improve the quality of the natural.	Farooq et al. [62]
	ECSR2	Our company makes investments to create a better life for future generations.	
	ECSR3	Our company implements special programs to minimize its negative impact on the natural environment.	
	ECSR4	Our company targets sustainable growth which considers future generations.	
Shared Vision Capability	SVC1	I fully understand the meaning of our company's vision and mission and I can fully explain it in detail.	Luo et al. [27]
	SVC2	I can understand the meaning of the phrase "make culture" embedded in our vision.	
	SVC3	I fully engaged and in accordance with our company's vision and mission.	
	SVC4	I can explain our company's vision and mission and business direction in detail.	
	SVC5	Vision and business direction of our company are adequately set.	
	SVC6	I know what need to do in order to achieve our company's vision.	
Resource Slack	RS1	Our company has a pool of uncommitted resources that can quickly be used to fund new strategic initiatives.	Gao and Yang [27]
	RS2	Our company can obtain resources at short notice to support new strategic initiatives.	
	RS3	Our company has substantial resources at the discretion of management for funding new strategic initiatives.	
Green Innovation Performance	GIP1	Our company chooses the materials of the product that produce the least amount of pollution for conducting the product development or design.	Chang et al. [63]
	GIP2	Our company chooses the materials of their products that consume the least amount of energy and resources for conducting the product development or design.	
	GIP3	Our company would circumspectly evaluate whether their products are easy to recycle, reuse, and decompose for conducting the product development or design.	
	GIP4	The manufacturing process of our company effectively reduces the emission of hazardous substances or wastes.	
	GIP5	The manufacturing process of our company effectively recycles wastes and emissions that can be treated and reused.	
	GIP6	The manufacturing process of our company effectively reduces the consumption of water, electricity, coal, or oil.	

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