

## Article

# The Relationship between Corporate Environmental Responsibility and Firm Performance: A Moderated Mediation Model of Strategic Similarity and Organization Slack

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**Abstract:** There has been growing interest among business managers and academics in corporate environmental responsibility (CER), which represents a company's focus on its long-term sustainability and society. Past research, however, has reported inconsistent and mixed results with regard to the link between CER and firm performance. This study, therefore, proposes and validates a moderated mediation model of strategic similarity and organizational slack to better explain the relationship between CER and firm performance. Data were obtained from 260 listed firms in China from 2015 to 2017, resulting in 780 firm-year observations. Multivariate data analysis indicates that strategic similarity mediates the relationship between CER and firm performance. Furthermore, organizational slack moderates the relationship between CER and strategic similarity and the indirect effect of CER on firm performance through strategic similarity. The findings of this study provide insights for business managers attempting to understand and enhance the quality of their decision making regarding CER. Importantly, business managers should engage in CER activity and pursue strategic similarity to deal with pressure from stakeholders while following the competitive speed of competitors in the marketplace.

**Keywords:** corporate environmental responsibility; sustainability; strategic similarity; organizational slack; firm performance; China

## 1. Introduction

The issue of corporate environmental responsibility (CER) has been widely discussed in recent years. Many academic researchers and business managers have begun to acknowledge and focus on the importance of CER activity [1]. Pressure from stakeholders (e.g., governments, suppliers, consumers, and local communities) has gradually driven business firms into environmentally responsible actions. However, business firms still hold skeptical attitudes about the effects of CER on firm profits [2]. As a result, they reluctantly engage in CER activity and cautiously comply with government regulations [1].

The clarification of the link between CER and firm performance is critical for business practice, academia, and government agencies [3]. This approach will evidently persuade business firms to actively take actions if they understand the link between CER and firm performance. However, research conclusions on this relationship have been inconsistent [4,5]. On the one hand, a viewpoint states that

environmentally responsible firms will be at a competitive disadvantage compared with those with less environmental responsibility due to added expenses incurred by CER activities [6,7]. On the other hand, environmentally responsible behavior increases firms' reputations and makes firms become an attractive investment. Such firms can achieve support from stakeholders [3], reduce operational risk, and obtain long-term growth [8].

Considering the contradictory views, further studies must provide comprehensive insight into the link between CER and firm performance [1]. A possible reason for the inconsistent results in prior literature may be that most of studies do not consider the mediator and moderator in the relationship. In fact, many factors, such as strategic similarity and organizational slack, may play important roles in the link between CER and firm performance.

According to legitimacy theory, firms often seek to obtain legitimacy and resources in their external environment [9]. To establish organizational legitimacy, firms should take actions congruent with the norms of acceptable behavior in large social system of which they are a part [10]. Business managers should actively take actions in response to environmentally responsible issues because CER becomes an increasing public concern in society, and stakeholders pay attention and entail pressure on firms [11]. The adoption of strategic similarity is an effective way to deal with pressure from CER. Firms can secure their legitimacy, resources, and strategic position in the marketplace by adopting similar strategies applied by competitors in the same industry [12]. Therefore, strategic similarity may play a role in the relationship between CER and firm performance.

CER often requires firms to invest substantial resources and efforts [6]. If firms lack sufficient resources, they will then not be able to take actions in response to environmental pressures. Moreover, firms will not be able to follow the competitive speed of rival competitors in the same industry. Hence, firms may not obtain support from stakeholders and lose their competitive advantage in the marketplace [7]. According to the resource-based view, organizational slack is a potential resource that enables firms to effectively respond to internal and external changes [13,14]. Business managers can use organizational slack to engage in CER activity while exactly following competitors' actions in the markets. Thus, the role of organizational slack cannot be ignored in determining environmentally responsible issues [1].

The present study makes an important contribution to the literature by designing and validating a moderated mediation model of strategic similarity and organizational slack explaining the link between CER and firm performance. Specifically, this work aims to further clarify the mixed results of previous literature regarding the relationship between CER and firm performance. Given the severe environmental problems including air pollution and climate change in developing and emerging markets [15–17], this study focuses on China, which has the largest and fastest growing market among developing countries. Importantly, China has become the second largest economy in the world. According to the World Bank [18], the gross domestic product (GDP) in China was USD 12.238 trillion, and the gross national income (GNI) per capita was USD 8696 in 2017. Nevertheless, the carbon dioxide emissions in China increased to 7.544 metric tons per capita. There is growing awareness that business enterprises are the major pollution makers and energy consumers in the country [19]. Promoting CER has become a key focus of public society and stakeholders because environmental issues have been a major public concern in China in recent years [1]. In this regard, business firms are expected to play an important role in improving environmental quality by planning and executing management practices that minimize waste, hazard, and pollution [2]. Hence, this study's findings provide practical reference for business firms in formulating policies to solve environmental problems in China.

The rest of the paper is structured as follows. Section 2 shows a review of previous relevant studies and the developed hypotheses. Section 3 presents a discussion of the methodology. Section 4 describes the empirical results. Section 5 discusses the findings of this study. The final section provides the conclusions and suggestions for future research.

## 2. Theoretical Background and Hypotheses

### 2.1. Corporate Environmental Responsibility and Firm Performance

CER has been an important topic in the last decades because of global environmental degradation and climate change [20]. CER refers to the commitment and action of firms to reduce the impact of production and organizational processes on environment and society [2]. CER also indicates a firm's effort to protect and improve environmental quality [11].

The effect of CER on firm performance has been a debate among scholars. CER is claimed to be negatively related to firm performance. CER is recognized as a reflection of the ineffective use of a firm's resources due to the insufficiency of managers' expertise [21]. In contrast to firms with less CER, those with high CER are associated with additional costs, thereby placing them at an economic disadvantage [22] and limiting their strategic alternatives [23]. In general, CER may not benefit a firm and its stakeholders. CER activities increase the cost of firms due to shift of focus from the maximization of stockholders' value to the interests of a wide set of shareholders [24].

However, CER is also claimed to have a positive effect on firm performance. CER can contribute to the strengthening of favorable company image in the eyes of stakeholders [25], thereby enabling the firm to obtain critical resources from these stakeholders [26]. CER enhances product competitiveness [27], provides great reputation insurance against economic downturn or specific negative events [28], and becomes an important driver of a company's attractiveness to prospective employees [29].

In a meta-analysis reviewing 52 studies of CER over a 35-year period, Albertini [30] confirmed a positive effect of environmental performance and firm financial performance. Albertini [30] argued that firms engage in CER for two main reasons: cost advantage and differentiation advantage. Firms focused on environmental production process may enjoy a cost advantage because improvement in production will reduce pollution, save energy, and enhance production efficiency. Furthermore, firms may also enjoy differentiation advantage due to the focus on developing product characteristics and attributes that are environmentally friendly to customers. Additionally, according to signaling theory, firms may use CER as a signal to convey a positive image to public society. CER helps firms to build favorable reputations in the eyes of different stakeholders. As a result, CER helps firms to obtain legitimacy and resources from stakeholders and gain support from government and community. For example, customers may prefer products and services from environmentally responsible firms; community residents are more likely to support and welcome socially responsible firms to operate in their areas; government agencies also provide more support for firms who act to bring benefits for the whole society; etc. In addition, engaging in CER also helps firms to improve their production process, build new skills, and develop green capability that can satisfy customers' needs. Thus, the following hypothesis is developed.

**Hypothesis 1.** *CER will be positively related to firm performance.*

### 2.2. Strategic Similarity and Its Mediating Role

A mediator refers to a factor that is affected by the independent variable and influences the dependent variable. That is, the independent variable affects the mediator, which in turn influences the dependent variable. In this study, we argue that CER will have an impact on strategic similarity, which in turn leads to firm performance. In other words, strategic similarity mediates the relationship between CER and firm performance. In the following section, strategic similarity is defined and the hypothesis of the mediating role of strategic similarity between CER and firm performance is developed.

Strategic similarity refers to the strategic position of a firm relative to those of its competitors in the marketplace [12,31,32]. The main driving forces in a competitive and institutional environment enable organizations to adopt a strategy similar to that applied by their competitors in the environment [33]. Strategic similarity refers to a firm-level construct, which represents the extent to which a firm's strategic choice resembles the strategic positions of other competitors in the market place at a specific

point in time [12,34]. In other words, strategic similarity reflects a firm's level of consistency with other competitors in the same industry at equivalent points in time [35].

Research on resource dependence and institutional theory contends that strategic similarity helps firms obtain legitimacy and secure critical resources controlled by stakeholders [36,37]. This viewpoint suggests that an organization is regarded as an open system that interacts with many stakeholders in social networks [38]. A firm's success relies on its relationships with different stakeholders in the internal organization and the external society (e.g., government agencies, shareholders, suppliers, consumers, and employees) [10]. Operating in such a social network environment, a firm's strategy is legitimated if it is acceptable to its stakeholders; such strategy is also cognitively legitimated if it is implicitly and/or explicitly consistent with the industry consensus [12,39]. Furthermore, firms in an environment with high levels of complexity are often uncertain about their future and are likely to adapt mimetic behavior to reduce future failure rate. This imitating behavior leads firms to conform to leading firms in the same industry [40,41]. Consequently, a similar group of firms forms an organizational network that develops its own structure, norms, values, beliefs, and culture [42,43]. This network spontaneously establishes a range of acceptable legitimacy [41–44]. If firms reject this conventional wisdom embedded into the industry and organizational network or if they act outside of the range of acceptability of the industry, then the firms' legitimacy and reliability are challenged [36,41,45,46]. Therefore, firms may adopt a strategy similar to that applied by other firms in the same industry to obtain legitimacy and resources controlled by stakeholders in an organizational network and external environment. In other words, strategic similarity helps firms gain legitimacy and acceptance of stakeholders and secures critical resources controlled by these stakeholders [37,47].

CER represents a company's focus on its long-term sustainability and that of the whole society [48]. Companies with high environmental consciousness are willing to invest in CER activity, thus emphasizing long-term sustainable development instead of short-term profit [15]. In other words, firms with high levels of CER are likely to stand on the stakeholders' position to view the effect of CER on firms and the entire society. Therefore, these companies not only consider stockholders' interests when determining the level of CER investment but also the other stakeholders' benefits, such as their customers, suppliers, governments, and community. Jensen [49] stated that firms may not focus on stock price but are willing to sacrifice short-term interest to invest in CER activity and gain long-term benefits in the future.

Pressure from competitors and customer demands cause firms to produce environmentally friendly products. In today's turbulent environment, environmentally responsible strategies can effectively build the reputation of firms and obtain support from stakeholders due to constantly changing customer preferences and market trends and the fierce competition among companies [7]. The increasing pressure from stakeholders forces firms to engage in CER activity to gain legitimacy and secure resources controlled by their stakeholders. Firms should act consistently with this industry consensus because CER gradually becomes a widely-accepted norm, value, and belief of stakeholders in the marketplace [50]. In other words, firms should adopt a similar strategy to exactly follow their competitors when responding to environmental pressure. Such a strategy helps firms fulfill the expectations of stakeholders (e.g., customers, governments, suppliers, and community) and thus secure legitimacy while keeping firms close to their competitors [44,47]. Therefore, in an industry with strong environmental pressure, CER forces firms to adopt strategic similarity to act within industry consensus. The strategic similarity not only helps firms to gain legitimacy and resources of stakeholders but also protects and maintains the firms' positions relative to their competitors in the marketplace. Strategic similarity is an effective method for firms to deal with environmental pressure, enhance their capability to compete with competitors, and lead to improved performance. Thus, the following hypothesis is developed.

**Hypothesis 2.** *Strategic similarity mediates the relationship between CER and firm performance.*

### 2.3. Organizational Slack and Its Moderating Role

A moderator is known as another independent variable that may have a significant contributory effect on the original relationship between independent and dependent variables. In other words, the effect of the independent variable on the dependent variable will vary with different levels of the moderator. In this study, it is argued that organizational slack will moderate the relationship between CER and strategic similarity and the indirect effect of CER on firm performance through strategic similarity. It is believed that the effect of CER on strategic similarity may differ for firms with high strategic similarity and those with low strategic similarity. The following section will discuss organizational slack and its moderating role on the link between CER and strategic similarity.

Organizational slack has been extensively discussed in organizational theory and strategic management literature. Although a consistently used definition has not been reached, a commonly accepted one is that organizational slack encompasses available, recoverable, and potential slack [51]. Organizational slack, which comprises these three components, is commonly viewed as excess resources that play the role of “buffer” between organizations and external contingencies [52]. Business managers can deploy organizational slack to respond to unexpected demand [53] and successfully adapt to pressures from internal and external forces [54]. Such a “buffer” function provides the necessary flexibility for firms in response to environmental changes [55]. Surplus resources, such as financial, human, and social capital, can enhance a firm’s willingness to invest and implement CER activity [1].

CER requires the investment and commitment of firm resources in terms of time, money, effort, and managerial attention [7]. Campbell [56] argued that firms tend to act in environmentally responsible ways if an effective managerial system exists and if they gain sufficient support from stakeholders. Russo and Fouts [57] suggested that CER investment reflects a firm’s strategic commitment to its long-term growth and development. A firm’s resources and capability affect its willingness to engage in CER activities. Branco and Rodrigues [58] also argued that resources are important source of a firm’s strategic CER to establish competitive advantage. Firms with excess resources are willing to invest in CER and use it to obtain competitive advantage in the market.

A firm’s competitive advantage in a highly unstable, unpredictable, and complex market cannot be effectively protected because its products and services are rapidly imitated [59]. Thus, firms have to constantly create new value to build competitive advantages by operating in a highly uncertain and severely competitive environment [60]. Some firms may conform to other leading firms to catch up with their rivals. This similarity strategy reflects the imitating behavior that helps firms follow exactly the fast pace of competitors in an uncertain environment [61]. However, strategic similarity often requires abundance of resources because high costs occur when imitating the strategic behavior of leading firms. Followers often need additional resources to support and stabilize their relative positions in the marketplace to occupy the same strategic niche and obtain advantages similar to those of leading firms [62]. By contrast, if firms have insufficient resources, then they cannot follow the fast pace of their competitors and may lose their competitive advantages. For example, Samsung spent a huge amount of money to follow and exceed Sony in the late 90s. Furthermore, East Asian technology companies from Korea, Taiwan, and Singapore invested tremendous resources to catch up and shorten their distances with other more technologically advanced leading rivals from Japan and Western countries [63,64]. Therefore, excess resources help firms successfully adopt strategic similarity to follow and exceed competitors in a highly complex environment.

In today’s highly complex and unpredictable market, pressure from competitors and stakeholders are impelling firms to design and promote environmentally friendly products. To respond to pressure from competitors and stakeholders, firms can use slack resources as strategic resources to support their CER activities and perform strategic similarity. In this case, firms with high levels of slack resources will have sufficient capability to engage in CER activities and can catch up with their rivals. By contrast, firms with minimal or no resources cannot devote to CER activities to satisfy stakeholders’ demands and may not be able follow the fast pace of competitors. Therefore, organizational slack is critical



in enhancing a firm's engagement in CER activities and perform strategic similarity to respond to competitors. The following hypothesis is proposed.

**Hypothesis 3.** *Organizational slack moderates the relationship between CER and strategic similarity such that the relationship is strong when the organizational slack is high.*

This study proposes a comprehensive model (Figure 1), in which strategic similarity mediates the effect of CER on firm performance, and organizational slack moderates the association between CER and strategic similarity. Thus, predicting that the indirect effect of CER on firm performance via strategic similarity will be strong when organizational slack is high is logical. Accordingly, the following hypothesis is developed.

**Hypothesis 4.** *Organizational slack moderates the indirect effect of CER on firm performance through strategic similarity such that the indirect effect is strong when the organizational slack is high.*

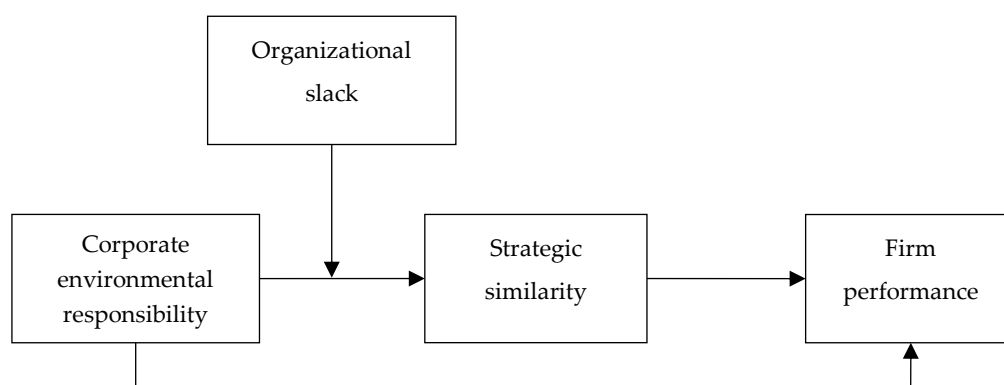


Figure 1. Research model.

### 3. Method

#### 3.1. Sample and Data Collection

This study used a sample of Chinese companies listed from Rankins CSR Ratings (RKS-Ratings) and Chinese Stock Market & Accounting Research (CSMAR) databases. The RKS-Ratings database contains the information and assessment score of social and environmental responsibilities of each listed Chinese firm. The CSMAR database provides the financial information for these listed Chinese firms. RKS-Ratings and CSMAR are often used by Chinese researchers due to their reliability and capability to provide valuable data. RKS-Ratings is a leading database that provides socially and environmentally responsible data of each listed company in China. It is one of the largest databases that can provide complete data for research in the field of corporate social responsibility. CSMAR, on the other hand, is also a leading database that offers data on the China stock markets. Data from CSMAR are suggested as complete, reliable, and valuable. Therefore, data of each company were collected from the RKS-Ratings and CSMAR databases from 2015 to 2017. Records with missing values were removed, and 780 firm-year observations were the final sample derived.

#### 3.2. Measures

##### 3.2.1. CER

Prior studies often collected CER data from Kinder, Lydenberg, Domini Research and Analytics; Toxic Release Inventory; or the Council on Economic Priorities databases. However, none of these databases include firms from China. Only RKS-Ratings comprises complete indices that evaluate the

CER of listed Chinese firms. Therefore, the CER indices in RKS-Ratings were adopted as a proxy for CER in the present study.

### 3.2.2. Strategic Similarity

Based on a generic strategy proposed by Porter [31,32], this study used value added per employee to measure low cost strategy [65]. A ratio of advertising expenses to revenues was used to measure marketing differentiation strategy [62]. A ratio of R&D expenses to revenues was also used to measure technology differentiation strategy (see also [66]). The following equation was used according to Deephouse [12] and Finkelstein and Hambrick [67] to measure strategic similarity:

$$\text{Strategic similarity} = \sum \text{abs}\left[\frac{p_{it} - \mu_{it}}{\sigma_{it}}\right], \quad (1)$$

where  $p_{it}$  is the value of strategic dimension  $i$  of firm  $p$  in the year  $t$ ;  $\mu_{it}$  is the average value of strategic dimension  $i$  of the industry in the year  $t$ ;  $\sigma_{it}$  is the standard deviation of strategic dimension  $i$  of the industry in the year  $t$ ;  $I = 1, 2, 3$  (1: low cost strategy, 2: marketing differentiation strategy, and 3: technology differentiation strategy);  $\text{abs}$  is the absolute notation; and  $\Sigma$  is the summation notation. The scores were multiplied by minus 1 to transform the meaning to strategic similarity [67]. The scores of strategic similarities include all numbers greater than or equal to zero. A score of zero indicates that firms have the same strategy, and a score greater than zero indicates the level of differences among firms' strategies [12,67].

### 3.2.3. Organizational Slack

Following the methods of Bourgeois and Singh [51] and Voss et al. [68], this study measured three types of organizational slack. Available slack was calculated by the ratio of current assets to current liabilities. In addition, recoverable slack was measured by the ratio of sales and general administrative expenses. Finally, potential slack was calculated by the ratio of equity to debt. We used an average score of the standardized scores of these three types of organizational slack as a composite index of organizational slack [69].

### 3.2.4. Firm Performance

Following Spanos et al. [66], this study used return on asset (ROA), return on equity (ROE), and return on sales (ROS) to assess firm performance. A composite index of the average standardized scores of these three variables was used to measure firm performance. Cronbach's  $\alpha$  of this measure was 0.86.

### 3.2.5. Control Variables

Due to potential effects on firm performance, some variables were controlled in this study. According to Boeker [70] and Russo and Fouts [57], firm size, firm age, and prior firm performance were used as major control variables in this study.

## 3.3. Analysis Method

A multiple regression model was used to test the proposed hypotheses in this study. We followed the regression methods proposed by Preacher, Rucker, and Hayes [71] and used PROCESS v3.1 developed by Hayes [72] to test our hypotheses. In order for mediating effect establishment, the independent variable must be significantly related to the dependent variable in the first model and the mediation variable in the second model, respectively. The mediation variable must be significantly related to the dependent variable in the third model, and if the independent variable becomes statistically insignificant or its effect reduces compared to that of the first model, a mediation is supported. Furthermore, to test the moderation effect, bootstrapping at 95% with 1000 re-samples

was conducted. The following equations were used to test the mediating effect of strategic similarity in this study.

$$\text{Model 1: Firm performance} = \beta_0 + \beta_1 \text{Firm size} + \beta_2 \text{Firm age} + \beta_3 \text{Prior performance} + \beta_4 \text{CER} + \epsilon_1 \quad (1)$$

$$\text{Model 2: Strategic similarity} = \beta_0 + \beta_1 \text{Firm size} + \beta_2 \text{Firm age} + \beta_3 \text{Prior performance} + \beta_4 \text{CER} + \epsilon_2 \quad (2)$$

$$\text{Model 3: Firm performance} = \beta_0 + \beta_1 \text{Firm size} + \beta_2 \text{Firm age} + \beta_3 \text{Prior performance} + \beta_4 \text{Strategic similarity} + \beta_5 \text{CER} + \epsilon_3 \quad (3)$$

Furthermore, in order for the moderating effect of organizational slack to be established, the interaction term between CER and organizational slack must be statistically significant in the fourth model. The following regression equation is used.

$$\text{Model 4: Strategic similarity} = \beta_0 + \beta_1 \text{Firm size} + \beta_2 \text{Firm age} + \beta_3 \text{Prior performance} + \beta_4 \text{CER} + \beta_5 \text{Organizational slack} + \beta_6 \text{CER} * \text{Organizational slack} + \epsilon_4 \quad (4)$$

Several studies have suggested that the relationship between CER and firm performance may be biased due to endogeneity [71]. To avoid this problem, we selected variables in different time periods and used a time-lag of one year between independent, mediator, and dependent variables. The independent variable was collected in a first period (2015), the mediator was selected in a second period (2016), and the dependent variable was gathered in a third period (2017).

## 4. Results

### 4.1. Descriptive Statistics

Descriptive statistics including means, standard deviations (SD), and Pearson correlations ( $r$ ) are shown in Table 1. Results show that CER was positively related to strategic similarity ( $r = 0.12$ ,  $p < 0.01$ ) and firm performance ( $r = 0.11$ ,  $p < 0.01$ ). Strategic similarity was positively related to firm performance ( $r = 0.49$ ,  $p < 0.01$ ). Organizational slack was positively related to strategic similarity ( $r = 0.22$ ,  $p < 0.01$ ) and firm performance ( $r = 0.24$ ,  $p < 0.01$ ) but not to CER ( $r = -0.02$ ,  $p > 0.05$ ).

**Table 1.** Descriptive statistics and correlations.

Variables	Mean	SD	1	2	3	4	5	6	7
1. Firm size	0.95	0.73	1						
2. Firm age	30.16	13.42	−0.55 **	1					
3. Prior performance	10.83	20.57	0.19 **	−0.22 **	1				
4. CER	39.05	14.44	0.14 **	−0.39 **	0.06	1			
5. Strategic similarity	13.94	7.05	0.28 **	−0.34 **	0.10 **	0.12 **	1		
6. Organizational slack	15.12	12.97	0.07	−0.06	0.07	−0.02	0.22 **	1	
7. Firm performance	6.56	11.60	0.30 **	−0.340 **	0.50 **	0.11 **	0.49 **	0.24 **	1

Note:  $n = 780$ , \*\*  $p < 0.01$ , CER = Corporate environmental responsibility.

### 4.2. Hypothesis Testing

Results of multiple regression analysis are presented in Table 2. Model 2 was used to test the relationship between CER and firm performance. CER was not significantly related to firm performance ( $\beta = 0.01$ ,  $p > 0.05$ ). Thus, Hypothesis 1 was not supported.

Model 4 showed that CER was significantly and positively related to strategic similarity ( $\beta = 0.03$ ,  $p < 0.05$ ). Model 3 also indicated that strategic similarity was significantly and positively related to firm performance ( $\beta = 0.56$ ,  $p < 0.001$ ). To confirm the indirect effect of CER on firm performance via strategic similarity, we performed a bootstrapping at a 95% confidence interval [0.026, 0.148] with 1000 re-samples. The indirect effect was considered statistically significant because the bias-corrected confidence interval did not include zero, thereby supporting Hypothesis 2.



Model 4 showed that the interaction between CER and organizational slack was significantly and positively related to strategic similarity ( $\beta = 0.03, p < 0.001$ ). Using the guidelines from Aiken and West [73], we computed slopes one standard deviation above and below the mean of the organizational slack to plot the interaction. As illustrated in Figure 2, the interaction pattern was found to be consistent with our hypothesis. Specifically, CER exhibited a stronger positive relationship to strategic similarity when the organizational slack was high ( $\beta = 0.08, p < 0.001$ ) than when the organizational slack was low ( $\beta = 0.04, p < 0.01$ ). Hence, Hypothesis 3 was supported.

Table 2. Regression results.

Variables	Model 1 (Performance)	Model 2 (Performance)	Model 3 (Performance)	Model 4 (Strategic Similarity)
Constant	10.72	11.25	0.30	2.54
Control variables				
Firm size	0.16 ***	0.16 ***	0.15 ***	0.15 ***
Firm age	−0.25 ***	−0.26 ***	−0.23 ***	−0.22 ***
Prior performance	0.32 ***	0.32 ***	0.31 ***	0.31 ***
Independent variable				
CER		0.01	0.01	0.03 *
Mediator				
Strategic similarity			0.56 ***	
Moderator				
Organizational slack				−0.07 ***
Interaction				
CER × organizational slack				0.03 ***
F	40.697 ***	40.515 ***	354.155 ***	72.707 ***
ΔF		0.182	313.640 ***	32.010 ***
R <sup>2</sup>	0.136	0.136	0.901	0.219
ΔR <sup>2</sup>	0.132	0.132	0.769	0.083

Note: n = 780, \*  $p < 0.05$ , \*\*\*  $p < 0.001$ , CER = Corporate environmental responsibility.

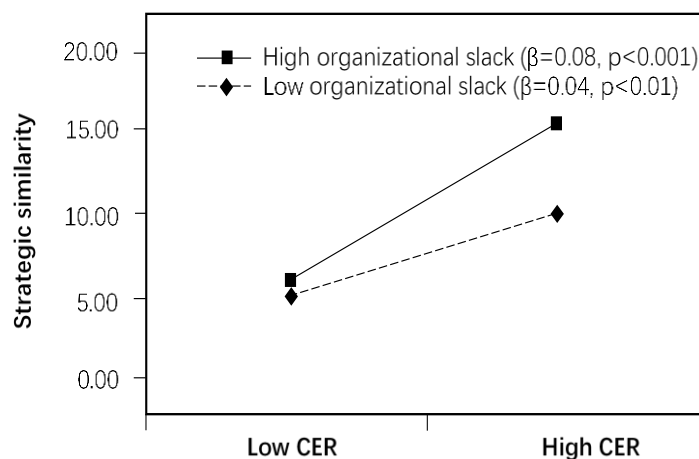


Figure 2. Moderating effect of organizational slack.

We used bootstrapping procedures proposed by Preacher et al. [71] to test the moderated mediation hypothesis. Table 3 shows the indirect effect of CER on firm performance through strategic similarity, which was significantly and positively different from zero and varied between low [0.021, 0.135] and high organizational slack [0.005, 0.176]. The indirect effect was considered to be statistically significant because the bias-corrected confidence interval did not include zero. Thus, Hypothesis 4 was supported.

**Table 3.** Moderated mediation results.

Moderator	Indirect Effect	BootSE	BootLLCI	BootULCI
Low organizational slack	0.072	0.028	0.021	0.135
High organizational slack	0.127	0.045	0.005	0.176

Notes: Bootstrap sample size = 5000. Low = 1 s.d below the mean, High = 1 s.d above the mean. Biased-corrected CI is reported. LL = Low limit; UL = Upper limit; CI = Confidence interval.

## 5. Discussion and Implications

To clarify the mixed results about the impact of CER on firm performance in the prior literature, this study proposes a moderated mediation model of strategic similarity and organizational slack in the link between CER and firm performance. The findings make valuable contributions to academic research and practical managers.

### 5.1. Theoretical Implications

First, prior studies indicated the positive or negative direct effects of CER on firm performance [3,6–8]. The present results show that CER does not directly influence firm performance. As such, the relationship between CER and firm performance is more complicated than the results of many prior studies indicated. Moreover, our findings indicate the possibility of a missing mediator and/or moderator in the link between CER and firm performance. Thus, an integrated model of mediation and moderation is necessary to elucidate the effect of CER on firm performance.

Second, several theories have been used to explain the effect of CER on firm performance, but an inconsistent result has been reported, implying the complex link between CER and firm performance [4,5]. The inconsistent and mixed findings on this relationship signify a critical gap in previous literature. This study provides a comprehensive finding on the effect of CER on firm performance by proposing a moderated meditation model of strategic similarity and organizational slack into the link between CER and firm performance. This study also provides evidence to clarify the inconsistent and complex relationship between CER and firm performance in the prior literature.

Third, we found that CER indirectly affects firm performance through strategic similarity. Interestingly, this finding partly contradicts the result obtained by Albertini [30] that environmental management practices lead to differentiation advantage. The possible explanation is that many Chinese firms have been already engaged in environmental initiatives to respond to the pressure from their customers, investors, and competitors. This trend urges other firms to adopt strategic similarity to fulfill stakeholders' expectations while following exactly the fast pace of competitors in the marketplace. Thus, strategic similarity can help firms deal with CER issues to obtain legitimacy while catching up with competitors to secure their positions in a highly complex environment. Strategic similarity effectively works in China's business environment because environmental issues are a major public concern and customers often demand products with high quality and reasonable price. In such a business environment, strategic similarity not only helps firms respond to environmentally responsible pressures but also enhances their capability to follow leading companies in the market and creates value for customers.

Finally, Li et al. [1] found that organizational slack weakens the association between CER and firm performance. However, our finding differs from the result of Li et al. [1], who reported that organizational slack strengthens the link between CER and strategic similarity and the indirect impact of CER on firm performance via strategic similarity. In the present study, organizational slack plays a "buffer" function for firms to respond to environmental changes [52]; that is, organizational slack provides additional resources for firms to support CER activities while increasing firms' capabilities to follow competitors in the marketplace. As a result, organizational slack helps firms pursue a high level of CER and strategic similarity and improve their financial performance [74].

## 5.2. Practical Implications

The findings of this study also provide valuable implications for practical managers. The effect of CER on firm performance is more complex than a simple direct relationship. CER enhances the firm performance through strategic similarity, and this indirect effect is strong when the organizational slack is high. Therefore, business managers should understand this complex relationship to enhance the quality of their decision making. Moreover, business managers should engage in CER activity and pursue strategic similarity to deal with pressure from stakeholders while following the competitive speed of competitors in the marketplace. In a highly complex environment with strong CER pressure from stakeholders, strategic similarity helps firms obtain legitimacy while securing firms' positions in the market and increasing firm performance. Furthermore, organizational slack is not productive on its own and it cannot be a competitive advantage source if ineffectively utilized by businesses to perform their activities [74]. Business managers can use excess resources to support CER activity and invest these resources to their strategic similarity. In this case, organizational slack will strengthen firms' capabilities to conduct environmental activities while enabling them to flow and compete with their competitors. Investment of organizational slack to CER activity and strategic similarity will finally lead to superior firm performance.

## 6. Conclusions and Future Research

This study is among the first of its kind that empirically confirms the mediating role of strategic similarity and the moderating role of organizational slack in explaining the association between CER and firm performance. The moderated mediation model validated in the present study can serve as a framework for future research. The findings of this study also enrich the literature associated with CER and sustainability in developing and emerging markets. Practically, such findings provide insights for business managers and leaders attempting to develop and implement CER practices, which contribute to corporate long-term sustainability and environmental quality.

The present study, however, has several limitations. First, this study only uses the three-year data of listed companies in China. As such, the effect of CER on firm performance over a long-term period cannot be reflected. Future research should use long-time panel data to further examine the link between CER and firm performance. Second, pressure from stakeholders and competitors for legitimacy and competitive advantage is strong in China's business environment because environmental and social issues are particularly salient in the country. Thus, testing the effect of CER on firm performance in such a context is appropriate in our study. However, future research should generalize our findings in different countries and cultural contexts. Finally, given that industry specific variables may affect the relationship between CER and firm performance, it would be desirable for future research to conduct a cross-industry analysis.

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