

---

# How does green operational policy impact on corporate social responsibility and enterprise image? Evidence from South Korean construction enterprises

---

Chenglin Qing

Department of Business Administration,  
Honam University, 59, Honamdae-gil,  
Gwangsan-gu, Gwangju, 62399, South Korea  
Fax: +82-62-940-5116  
Email: sungrim87@gmail.com

**Abstract:** This empirical study focused on the South Korean construction enterprises and emphasised the role of green management and corporate social responsibility (CSR). The purpose of this study is to verify the influence of green management on South Korean construction enterprise image. Furthermore, the study also verified the mediating effect of CSR on the relationship between green management and enterprise image. The results of empirical analysis showed that green management had a positive effect on enterprise image. Corporate social responsibility showed positive mediating role. According to these results, the study discussed the importance roles of green management and CSR. Finally, the limitation and the direction of future study were provided.

**Keywords:** green management practices; enterprise image; corporate social responsibility; CSR; construction enterprises; mediating effects; green strategy; green policy; South Korea; eco-friendly enterprises.

**Reference** to this paper should be made as follows: Qing, C. (2022) 'How does green operational policy impact on corporate social responsibility and enterprise image? Evidence from South Korean construction enterprises', *Int. J. Technology, Policy and Management*, Vol. 22, Nos. 1/2, pp.98–113.

**Biographical notes:** Chenglin Qing is a Professor at the Honam University of South Korea. He was a Visiting Professor at Chifeng University of China. He has written extensively on diverse topics in R&D Investment, policy of development, organisation performance, consumer innovation, small and medium-sized enterprises policy, and green consumption. His research publications include three books and more than 20 papers.

---

## 1 Introduction

Environmental regulations are being strengthened internationally on the environmentally sound and sustainable development (ESSD) of industry in every country in the world (UN Environment, 2019). The effort related to preserving the environment of each country was started using indirect environmental regulations such as environmental

product declarations (EPD), as well as direct environmental regulations such as various emission allowance standards (OECD, 2010). According to this trend, the construction industry is pursuing objective and active green management practices to evaluate the impact of energy and materials consumed and discharged. This involves all processes related to such as construction materials, construction techniques, eco-friendly construction, and disposal services. The aim of this effort is to evaluate comprehensively their impacts on the environment, and to seek ways to improve the environment based on this (An, 2020).

For the reduction of greenhouse gases, researchers in developed countries have long been studying the amount and kinds of pollutants generated during the construction, operation, and disposal of buildings by those in the construction sector (Hilary, 2009). In particular, buildings are closely related to quality-of-life (directly or indirectly), so they are the subject of continuous research. The mass use of stone, soil, metal, biomass, coal, petroleum, plastic, and ceramics in buildings is very energy-intensive (Lee et al., 2013). Construction companies can protect the environment through green management and this is expected to serve as a next-generation growth engine.

In order to pursue economic benefits and companies have negatively affected the ecological environment due to excessive use of resources and energy and emission of harmful substances. Eventually, global environmental problems such as energy shortage, environmental pollution, and climate change have gradually intensified and are a stumbling block to the sustainable development of mankind (Berrone et al., 2013). Therefore, companies are emphasising the roles of green management to save resources, energy and minimise environmental pollution. In modernisation of urban construction such as real estate development, the importance of green management is becoming more important in the management activities of construction companies.

Green management refers to management that fulfils social and ethical responsibilities while minimising the occurrence of greenhouse gas emissions and environmental pollution. This is done by saving resources and energy in management practices and using them efficiently (Ko et al., 2012). The need to practice green management has been a social contribution activity by which companies could avoid social criticism in the past. More recently, companies are basing their levels of investment on the judgement that implementation according to social responsibility ultimately helps increase sales (Yoon and Kim, 2000). The most efficient means to enhance the image of an enterprise is by showing an image of real concern for society and environment rather than for profit (only). The shift of the market environment to modern capitalism has established the preservation of environment as a major management strategy of a company, not just its responsibility (Park et al., 2012).

Studies on corporate social responsibility (CSR) have been ongoing since Bowen (1953) first made academic definitions. As social interest in corporate ethics and social responsibility has increased, CSR practices have become a key issue in green management practices in academia and corporations (Carroll and Shabana, 2010; McWilliams and Siegel, 2001; Schwartz and Carroll, 2003). CSR practices are essential for sustainability management regardless of the size of a company, and they are used as marketing tools to form a positive image of the company. A variety of related studies are being conducted in academia (Park and Park, 2013; Ban, 2013; Park, 2015; Park et al., 2014).

Research on the relationship between green management practices and enterprise images can be carried out by setting various measurement variables (Boiral and Roy,

2007; Heras-Saizarbitoria et al., 2011; Kim, 2005, 2009; Oh and Lee, 2000; Cha, 2005). The variables of green management can be set according to the standards of the International Standardization Organization (ISO), energy management, environmental management, and social responsibility (Midilli et al., 2006; Yoon et al., 2011; Jang, 2009; Dias-Sardinha et al., 2003; Lee et al., 2013). This research was done to investigate the relationship between green management practices and the image of construction companies in terms of strategies for green management practice, resources, energy, systems, greenhouse gases, and environmental pollution. This was achieved by applying the green management evaluation model (GGR, 2009) from among a variety of research models. For this purpose, first, it explains the influence of green management practices on CSR. Second, it explains the influence of CSR on enterprise image. Third, the mediating effect of CSR is proved in the process related to green management practices improve enterprise image.

Therefore, this research was focused on explaining the effect of green management practices on the actual enterprise image. The results prove the moderating effect of social responsibility as a way to increase the effect of green management practices on the image of an enterprise. The implementation of social responsibility is a factor that, by itself, affects the corporate image (Becker-Olson et al., 2006; Brown and Dacin, 1997; Folkes and Kamins, 1999; Klein and Dawar, 2004; Sen and Bhattacharya, 2001). It is expected that if the company recognises its social responsibility in practicing green management practices, it will increase the positive effect on its enterprise image.

## 2 Literature review and hypotheses

### 2.1 Green management

There is a close relation between the consumption of resources and environmental pollution related to human activities. Moreover, the resources and energy that humans can use are continuously produced based on resource capital (providing the basis of human survival) and are limited by purification of the pollutants emitted by humans, within the scope of environmental capacity (Lee et al., 2013). However, environmental pollution beyond the ability to clean up the ecosystem is like excessive debt generated by high-cost economic activities. This points to the bankruptcy of the global environment (Gonzalez-Benito, 2008). Green management focuses on using integrated strategies and management activities to enhance corporate value. This is done by assuring substantial accountability over environmental, social, and economic aspects by taking advantage of green corporate management (Haden et al., 2009; Ko et al., 2012; Kang, 2010; Joo and Choi, 2015).

Green management, which regards environmental protection as the top priority, is becoming a 'blue ocean' regarding the green growth of companies (Kang et al., 2011). The Korean government also announced a national vision of low-carbon green growth in 2008 considering this situation. Green management was presented as a new paradigm to transform the crisis involving climate, energy, resources, and environment into an opportunity for growth (Yoon and Kim, 2000). Green management refers to management that fulfils social and ethical responsibilities while minimising the occurrence of greenhouse gas emissions and environmental pollution by conserving resources and energy, and efficiently using them in management practices (Ma et al., 2018).

The Green Growth Committee organised by the Korean government, plays a role in reviewing and coordinating green growth policies, and the evaluation factors of the Green Growth Committee contribute greatly to the growth of companies (Joo and Choi, 2015). The main elements used for evaluation of green management practices complement the disadvantages of environmental management. The focus is on direct environmental factors and on complementing the disadvantages of sustainable management that now limit the environment, to include a wide range of social and economic systems by which to evaluate management (Ko et al., 2012). In other words, green management focuses on the influence on the environment of environmental management, and emphasises environmental impacts in the process of achieving social responsibility through continuous value creation by companies (Kang et al., 2011).

The Green Growth Committee, in cooperation with the Ministry of SMEs and Start-ups, Industry, and Energy; Ministry of Trade; and the Ministry of Environment, announced the “Green Management Standards”. The key evaluation items were considered in detail and sorted into five major categories (greenhouse gas/environmental pollution, systems, strategy, resource/energy, and social/ethical responsibility). Twenty categories, the operation system, and performance were evaluated (GGR, 2009; Ko et al., 2012). The “Green Management Standard” is the first detailed standard for green management prescribed in the Basic Law on Green Growth. It is being used as the standard for applying the Korean government policies related to green management.

Green management is the process of recognising the influence of overall business activities on the environment; then, establishing and implementing plans to reduce the influence of business activities on the environment (Kim, 2013). Ko (2014) uses five green management factors: greenhouse gas and environmental pollution, systems and strategy, resources, energy, and social and ethical responsibility. The effect of green management on management performance was analysed using empirical analysis. Performance of the green management practices of a company have the effect of enhancing the image of environment-oriented companies. These companies minimise the negative environmental impact on their products and processes, and increase their competitiveness through expansion of the market (Ko et al., 2012). In addition, the high public recognition of the company in relation to the environment enhances the relative corporate value through environmentally friendly management practices, and also results in an increase in sales (An and Heo, 2016). Companies that invest heavily in green management practices can potentially avoid future environmental pollution, environmental accidents, and environmental debt. They could also enhance their corporate images through cost minimisation due to reduction of the waste of materials and the use of inefficient processes (Wang and Wang, 2016).

## *2.2 Enterprise image*

Enterprise image refers to the general impression that forms in the minds of the public, not to any single aspect of the company (Barich and Kotler, 1991; Dichter, 1985; Kotler and Rath, 1984). An enterprise image cannot be seen as a concept related to a product or brand produced by a company, but it refers to the attitude held by people toward a company that is caused by certain company actions (Kunkel and Berry, 1968). The enterprise image can be regarded as a positive or negative impression formed by people based on various methods of communication (such as advertisements, news, and rumours) and the use of its products and services (Lee and Song, 2019).

The enterprise image can be seen as an abstract and ideological concept, but it can also be seen as a dynamic concept formed in a continuously executed process (Park et al., 2012). Winters (1986) defined an enterprise image as a public attitude toward a company and a belief in its corporate characteristics. These are determined by basic corporate ideology, ethics, organisation members, or specific market activities of the company. Moreover, it is closely related to customer behaviour by satisfying their desire and ultimately affecting their behaviour and increasing sales and satisfaction (Jung et al., 2019). The enterprise image signals various stakeholders, which plays an important role in the competitive market because signals provide information about companies that cannot be directly grasped (Fombrun and Shanley, 1990).

Looking at a series of studies on the enterprise image, this researcher has a slightly different view. Where there are common opinions, the enterprise image is a common idea that people have about a specific company that can have a direct or indirect influence on corporate activities (Lee and Song, 2019). Therefore, from the perspective of a company, building a positive enterprise image is an important factor that can promote the profit of a company over the long term. If a company has a negative image, it is necessary to make the effort to improve it (Jung et al., 2019).

### 2.3 *Corporate social responsibility*

Corporate social responsibility (CSR) must utilise ethical, economic, legal, and discretionary business performance categories in order to fully meet all the obligations of business to society. Moreover, these four basic expectations reflect the view of social responsibility by which business social responsibility is classified in a more thorough mode (Carroll, 1979, 1991). CSR is not independent of society, so a company should not only pursue unilateral profit; it should also contribute to the trend considering social influence, and promote the enterprise image of fulfilling social responsibility for sustainable development as a management strategy for survival (Lee et al., 2013). Ra (2018) said that it is CSR to use corporate resources to solve social problems such as environmental pollution and employment of the disabled in companies. In other words, CSR practices should contribute to the realisation of better quality of life and to the value of human beings, as well as to the basic goal of seeking profit (Chon and Yoo, 2013).

To maintain and develop such enterprise images, CSR practices are useful tools (Park et al., 2012). Brown and Dacin (1997) presented social responsibility and corporate ability as elements of the enterprise image, and the result of CSR practices helps consumers maintain a positive image of the company. This occurs when the positive attitude formed by CSR practices persists when consumers are exposed to negative information about the company (Klein and Dawar, 2004). Till and Nowak (2000) argued that the enterprise image formed by CSR practices directly affects the intention of consumers to purchase. Therefore, it is found that CSR practices are an appropriate tool for forming a positive image.

### 2.4 *Relationship between green management and CSR*

Companies are pursuing new business opportunities by adapting to new environmental laws and constraints, minimising environmental pollution, and strengthening enterprise images at the environmental level. They are also reorganising the management system, organisation, and strategy related to a company through various practices (Jeong, 2015).

The social responsibility related to environmental problems is made an essential factor by practicing green management practices (Park and Park, 2013). CSR is presented in various ways such as substantiality, corporate citizenship, corporate ethics, environmental protection, and corporate social performance (Carroll and Shabana, 2010).

In the case of companies that implement green management practices, social responsibility practices are essential factors and accommodate the needs of various stakeholders. If such companies neglect their roles in ethical management and social responsibility, there are direct and indirect effects on management performance, such as impacts on the corporate image (Choi and Koo, 2016). Social responsibility practices are essential for sustainable management of companies, and companies with a high proportion of green management practices need to be more active in these practices (Porter and Kramer, 2006; Ban, 2013). Therefore, the green management practices of companies can increase their social responsibility.

*Hypothesis 1: Green management will have a positive influence on CSR.*

## *2.5 Relationship between CSR and enterprise image*

Through investment in social responsibility practices, companies are taking steps and making efforts such as transparent corporate management, environmental protection policies, and community service to create an image of a socially responsible company (Park et al., 2014). Companies are being asked not only for economic responsibility but also to accept wider accountability for the other problems of society (Jung et al., 2019).

Social responsibility practices are connected to the survival and substantiality management of the company, and their importance is gradually increasing. As a result of this study, it is also suggested that the image and performance of the company has a positive impact on the company. Therefore, it is necessary to improve the image of a company by interacting with the needs of many stakeholders (Chon and Kim, 2011). Social contribution activities, local and cultural activities, economic responsibility activities, environmental protection activities, and consumer protection activities (among available CSR practices) have a positive impact on the enterprise image (Ji, 2010). Therefore, CSR practices can improve enterprise images.

*Hypothesis 2: CSR will have a positive influence on enterprise image.*

## *2.6 Relationship between green management and enterprise image*

The enterprise image reflects the way that one company can be distinguished from other companies, and various scholars have shown that an enterprise image affects customer perception of the company (Kunkel and Berry, 1968; Fombrun and Shanley, 1990; Winters, 1986; Dutta et al., 2008; Park et al., 2012; Lee and Song, 2019). Through green management, companies can enhance their enterprise images and increase their social role (Bragdon and Marlin, 1972). With the emergence of green consumers and the emergence of pressure groups (such as environmental groups), the consciousness of the general public about the environment has changed. Consumer interest in environment-related enterprise activities has increased (Chung et al., 2009).

Green management practice has a positive influence on a desirable enterprise image in relation to its contribution to the social welfare (Ko et al., 2012). The fact is that

carbon label-added products have a positive influence on the image of companies regarding green management practices. This means that consumer awareness of environmental problems is expanding, and it is suggested that the effectiveness of green marketing by companies can be verified and can contribute to the activation of green management and green marketing in the future (Jang, 2009). Green management practices such as carbon reduction and energy saving have contributed to the enhancement of enterprise images (Kim, 2012; Kim and Lee, 2016). Moreover, social contributions through green management practices, and the use of eco-friendly materials and technology methods, were reported to have a positive influence on enhancing enterprise images (Kim, 2016). Based on this relevance, the following hypotheses were established.

*Hypothesis 3: Green management will have a positive influence on enterprise image.*

## 2.7 Mediating effects of CSR

Variables such as green management practices and social responsibility practices of companies make and maintain positive images (Carroll and Shabana, 2010; Choi and Koo, 2016; Park et al., 2014; Jung et al., 2019). When the awareness of environmental protection is strengthened, companies focus on social responsibility practices. Then they will perform active eco-friendly management activities and will experience effects from their performance on such as enterprise images (Chon and Kim, 2011). By introducing a green management system, companies can differentiate their stakeholders into those who favour environmentally friendly companies. This expands their perception as a responsible company that is carrying out its corporate social responsibilities to the local community, as well as enhancing its enterprise image (Ra, 2018).

Therefore, companies are expected to recognise the importance of the environment through eco-friendly green management practices. Moreover, social responsibility practices will have a positive impact on the image of the strengthening door company. Based on the above discussion, CSR is expected to mediate the relationship between green management practices and enterprise images.

*Hypothesis 4: CSR will mediate the relationship between green management and enterprise image.*

## 3 Method

### 3.1 Sample and data collection

This study focused on organisational members who work at construction enterprises. The samples were collected from November 20, 2020 to December 18, 2020. A total of 250 questionnaires distributed and they were 245 questionnaires used in empirical analysis. According to this, the results of analysing the demographic characteristics of this study are as follows. The data showed that 141 males (57.6%) and 104 female (42.4%) participated in this survey. In terms of age, there are 71(29.0%) employees are less than 30, 56(22.9%) employees are 31-40, 76(31.0%) employees are 41-50, and 42(17.1%)

employees are over 50. In terms of position, 71(29.0%) employees are general staffs, 44(18.0%) employees are assistant managers, 70(28.6%) employees are section managers, 25(10.2%) employees are conductors, and 35(14.2%) employees are executives. In terms of their years of service, 27 (11.0%) employees had worked less than 1 year at their current workplace, 42 (17.1%) employees had worked between 1-3 years, 38(15.5%) employees had worked between 3-5 years, 57(23.3%) employees had worked between 5-10 years, and 81(33.1%) employees had worked over 10 years. Enterprise size showed that 18(7.3%) employees work at small enterprise, 37(15.1%) employees work at small and medium-sized enterprise, 59(24.1%) employees work at mid-sized enterprise, and 131(53.5%) employees work at large-sized enterprise.

### *3.2 Measures*

The green management practices was assessed with 18 items developed by Ko et al. (2012). Sample items included “This enterprise has established strategies and goals for facilitating green management” and “This enterprise is performing internal audits for green management”.

For the instrument of enterprise image, Jung et al. (2019) referred to the measurement items that were used based on the measurement tool developed by Winters (1986). In this study, it was revised and developed according to Jung et al. (2019) and the instrument consisted of 4 items. Sample items included “This enterprise has good technology” and “This enterprise is competitive”.

CSR was revised and developed based on the questions used by Park et al. (2012). It was assessed with 4 items. The sample items included “The enterprise practices ethical management” and “This enterprise is actively engaged in social contribution activities”.

## **4 Results**

First, exploratory factor analysis was conducted. Green management practices as factor 1 contained 17 items (70.526% of variance) in Table 1. The value of KMO showed 0.799(sig = 0.000). The results showed that all item loadings were higher than 0.6.

Moreover, CSR as factor 2 contained 3 items(45.526% of variance) and enterprise image as factor 3 contained 3 items (44.860% of variance) in Table 2. The results showed that all item loadings were higher than 0.6. Moreover, the value of KMO showed 0.633(sig = 0.000). These results viewed a goodness fit model.

Next, the descriptive statistics, reliability, and correlation analysis were conducted. The results of reliability showed in Table 3, that green management = 0.973, CSR = 0.952, and enterprise image = 0.937. Based on these results, all of these variables of Cronbach’s Alpha were over 0.7. These results satisfy the acceptable value (Nunnally, 1978) and viewed high reliability. The correlation analysis showed that green management is positively associated with CSR( $r = 0.608, p < 0.001$ ). CSR is also associated with enterprise image( $r = 0.691, p < 0.001$ ). Finally, green management is positively associated with enterprise image( $r = 0.658, p < 0.001$ ).



**Table 1** The result of exploratory factor analysis (Green management)

<i>Variable</i>	<i>Item</i>	<i>Component</i>
		<i>1</i>
Green management	Green management 1	0.930
	Green management 2	0.923
	Green management 3	0.922
	Green management 4	0.916
	Green management 5	0.876
	Green management 6	0.868
	Green management 7	0.858
	Green management 8	0.854
	Green management 9	0.854
	Green management 10	0.834
	Green management 11	0.808
	Green management 12	0.808
	Green management 13	0.797
	Green management 14	0.795
	Green management 15	0.749
	Green management 16	0.742
	Green management 17	0.697
Total		11.989
% of Variance		70.526
Cumulative %		70.526

KMO = 0.799(sig = 0.000)

**Table 2** The result of exploratory factor analysis (CSR and enterprise image)

<i>Variable</i>	<i>Item</i>	<i>Component</i>	
		<i>2</i>	<i>3</i>
CSR	CSR 1	0.919	0.337
	CSR 2	0.887	0.329
	CSR 3	0.854	0.402
Enterprise image	Enterprise image 1	0.324	0.933
	Enterprise image 2	0.386	0.848
	Enterprise image 3	0.343	0.848
Total		2.732	2.692
% of Variance		45.526	44.860
Cumulative %		45.526	90.386

KMO = 0.633(sig = 0.000)

**Table 3** The results of descriptive statistic, reliability, and correlation analysis

	Mean	Std. deviation	1	2	3
1	2.676	0.872	(0.973)		
2	2.914	1.012	0.608***	(0.952)	
3	3.229	1.002	0.658***	0.691***	(0.937)

1 = Green management, 2 = CSR, 3 = Enterprise image, () = Reliability

\* $p < 0.05$ , \*\* $p < 0.01$ , \*\*\* $p < 0.001$ .

In order to verify hypotheses of this study, it conducted simple and multiple regression analysis and SPSS 18 program was used. First, it verified the effect of green management on CSR. Table 4 showed the result that green management had a positive influence on CSR ( $\beta = 0.608, p < 0.001$ ). Thus, the hypothesis 1 is supported.

**Table 4** The effect of green management on CSR

<i>Dependent: CSR</i>			
	<i>Model 1</i>		
	$\beta$	<i>t</i>	VIF
Green management	0.608***	11.940	1.000
$R^2$	0.370		
$\Delta R^2$	0.367		
<i>F</i>	142.560***		

\* $p < 0.05$ , \*\* $p < 0.01$ , \*\*\* $p < 0.001$ .

Second, it verified the effect of CSR on enterprise image. Table 5 showed the result that CSR had a positive influence on enterprise image ( $\beta = 0.691, p < 0.001$ ). Thus, hypothesis 2 is supported.

**Table 5** The effect of CSR on enterprise image

<i>Dependent: Enterprise image</i>			
	<i>Model 1</i>		
	$\beta$	<i>t</i>	VIF
CSR	0.691***	14.912	1.000
$R^2$	0.478		
$\Delta R^2$	0.476		
<i>F</i>	222.362***		

\* $p < 0.05$ , \*\* $p < 0.01$ , \*\*\* $p < 0.001$ .

Finally, it verified the mediating effect of CSR on the relationship between green management and enterprise image. Table 6 shows the mediating effect of CSR. Model 1

showed green management ( $\beta = 0.658$ ,  $p < 0.001$ ) had a significant influence on enterprise image. Thus, hypothesis 3 is supported. Model 2 showed green management ( $\beta = 0.378$ ,  $p < 0.001$ ) and CSR ( $\beta = 0.462$ ,  $p < 0.001$ ) had significant influences on enterprise image. The effect of green management on the image in Model 1 and the effect of green management on the enterprise image in Model 2 were compared. The effect of Model 2 was significantly reduced than that of Model 1. Moreover, Sobel test was conducted to secure verification of mediating effect. The result showed  $z = 7.307$ ,  $p < 0.001$ . According to these results, the mediating effect can be seen as significant and it shows partial mediating effect. Therefore, hypothesis 4 is supported.

**Table 6** The mediating effect of CSR

	<i>Dependent: Enterprise image</i>				
	<i>Model 1</i>		<i>Model 2</i>		<i>VIF</i>
	$\beta$	<i>t</i>	$\beta$	<i>t</i>	
Green management	0.658***	13.637	0.378***	7.097	1.587
CSR			0.462***	8.670	1.587
$R^2$ (Adj- $R^2$ )	0.434(0.431)		0.568(0.564)		
$\Delta R^2$ (Adj- $R^2$ )	-		0.134(0.133)		
<i>F</i>	185.978***		158.952***		

\* $p < 0.05$ , \*\* $p < 0.01$ , \*\*\* $p < 0.001$ .

## 5 Conclusions

### 5.1 Conclusions and implications

In this study, the effects of green management practices on enterprise image through CSR were investigated. The results of this research can be summarised as follows. First, the green management practices and CSR of Korean construction companies showed a significant positive relationship. Second, the recognition of green management practices and social responsibility of Korean construction companies has been proven to improve the enterprise image. Third, social responsibility showed a partial mediating effect in the relationship between corporate green management practices and enterprise images.

The results of this study have the following implications. First, most of the empirical analyses conducted involving eco-friendly construction companies are about airport architecture, and there is a lack of empirical research related to green management practices of Korean construction companies. In particular, studies have not been conducted on construction companies despite the high correlation between green management practices and enterprise image. It is meaningful that the social responsibility (among the eco-friendly factors) of companies was examined in this relationship.

Second, as the company awareness of the environment has gradually improved, green management has had a significant impact on the construction industry as a whole. In particular, eco-friendly green management forms a positive enterprise image through energy conservation, carbon reduction, prevention of environmental pollution, and

regulation of harmful chemicals. Furthermore, it is necessary to recognise the importance of green management at the level of construction companies, and to understand that all members and have various active strategies to realise it. Moreover, environmental pollution and climate change are factors that we all have to work on, but we also need for companies to make active efforts to create a socially responsible atmosphere.

Third, the social responsibility practices of construction companies that comply well with the law and fulfil ethical responsibility and public service responsibilities through proper and legitimate activities, have a positive effect on enterprise images. In particular, construction companies can improve their enterprise images more effectively through authentic social responsibility practices and emotional publicity strategies. In addition, it is necessary to promote and provide information for better enterprise performance. Therefore, most business members can recognise the importance and necessity of social responsibility.

The results of this study will make us to understand the recognition, roles, and importance of green management. Companies with green management are becoming more important as environmental problems such as global warming are emerging as global risks. In addition, the combination of green management and enterprise image is considered to be a strong strategy to enhance corporate competitiveness that can lead to a favourable attitude from customers because green management is interpreted in the same context as CSR. This study emphasises the importance and roles of green management and CSR. It is expected that providing efficient and systematic management plans will improve the enterprise images of eco-friendly companies.

## *5.2 Limitations and future research*

The limitations and direction of future research can be summarised as follows. First, problems associated with multi-collinearity in this research should be considered. This includes conditions such as the high correlation between variables. Therefore, it is considered that these problems are related to bias in the measurement method used in this study.

Second, in this study, the mediating effect of ethical social responsibility in identifying the relationship between corporate green management practices and enterprise image was verified. However, social responsibility should be divided into four normative dimensions (such as legal, ethical, economic, and charitable expectations) of society. Then, studies on the social responsibility of corporate green management practices should be conducted from a variety of perspectives.

Third, the focus of this study was to explain the green management practices of Korean construction companies. However, as more studies on social enterprises are conducted to solve social issues such as environmental problems, studies on green management practices in various industrial fields (such as social enterprises) should also be conducted.

Fourth, this study only focused on the mediating effect of social responsibility. However, it is expected that there will be various moderating variables for improving enterprise image, and future studies should be conducted from more diverse perspectives. For example, studies on regulatory variables such as green involvement, image suitability, and corporate authenticity should be conducted as well as regulatory variables that enhance corporate image, such as corporate reputation.

## References

- An, H.S. (2020) *Reasoning and Countermeasures for Safety Accounting of Construction Project Orderers*, SAMSUNG Institute of Safety, and Environment.
- An, W.S. and Heo, C.M. (2016) 'Corporate's eco-friendly activity and corporate image, brand image on brand attitude', *Korean Journal of Physical Education*, Vol. 55, No. 6, pp.393–404.
- Ban, H.J. (2013) 'The degree of internalization and constraints of financing: focused on mediate effect of corporate social responsibility', *Korea Trade Review*, Vol. 38, No. 1, pp.285–310.
- Barich, H. and Kotler, P. (1991) 'A framework for marketing image management', *Sloan Management Review*, Vol. 32, No. 2, p.94.
- Becker-Olson, K.L., Cudmore, B.A. and Hill, R.P. (2006) 'The impact of perceived corporate social responsibility on consumer behaviour', *Journal of Business Research*, Vol. 59, No. 1, pp.46–53.
- Berrone, P., Fosfuri, A., Gelabert, L. and Gomez-Mejia, L.R. (2013) 'Necessity as the mother of green inventions: institutional pressures and environmental innovations', *Strategic Management Journal*, Vol. 34, No. 8, pp.891–909.
- Boiral, O. and Roy, M.J. (2007) 'ISO 9000: integration rationales and organizational impacts', *International Journal of Operations and Production Management*, Vol. 27, No. 2, pp.226–247.
- Bowen, H.R. (1953) *Social Responsibilities of the Businessman*, Haper & Row, New York.
- Bragdon, J. and Marlin, J. (1972) 'Is pollution profitable?', *Risk Management*, Vol. 19, No. 4, pp.9–18.
- Brown, T.J. and Dacin, P.A. (1997) 'The company and the product: corporate associations and consumer product responses', *Journal of Marketing*, Vol. 61, No. 1, pp.68–84.
- Carroll, A.B. (1979) 'A three-dimensional conceptual model of corporate performance', *Academy of Management Review*, Vol. 4, No. 4, pp.497–505.
- Carroll, A.B. (1991) 'The pyramid of corporate social responsibility: toward the moral management of organizational stakeholder', *Business Horizons*, Vol. 34, No. 4, pp.39–48.
- Carroll, A.B. and Shabana, K.M. (2010) 'The business case for corporate social responsibility: a review of concepts, research and practice', *International Journal of Management Reviews*, Vol. 12, No. 1, pp.85–105.
- Carroll, B. (1979) 'A three-dimensional conceptual model of corporate performance', *Academy of Management Review*, Vol. 4, No. 4, pp.497–505.
- Cha, H.W. (2005) 'Image and corporate reputation on the organization-public relationship and corporate super-brand', *Advertising Research*, Vol. 68, No. 1, pp.171–199.
- Choi, A.R. and Koo, J.H. (2016) 'A study on the firm internationalization and performance: focused on the moderating effect of corporate social responsibility', *Journal of the Korean Data Analysis Society*, Vol. 18, No. 2, pp.839–850.
- Chon, M.L. and Kim, C.S. (2011) 'The effect of sustaining corporate social responsibility on relationship between CSR and financial performance', *Journal of Accounting and Finance*, Vol. 29, No. 3, pp.351–374.
- Chon, M.L. and Yoo, J.M. (2013) 'Corporate social responsibility and financial performance: investigating the moderating effects of motive and commitment of CSR', *Korean Management Review*, Vol. 42, No. 5, pp.1159–1185.
- Chung, Y.R., Kim, J.Y. and Kang, H.M. (2009) 'Corporate image attribute by participating in sports sponsorship on brand attitude and purchase intention', *Korean Journal of Physical Education*, Vol. 48, No. 3, pp.239–252.
- Dias-Sardinha, I., Reijnders, L. and Antunes, P. (2003) 'From environmental performance evaluation to eco-efficiency and sustainability balanced scorecards', *Environmental Quality Management*, Vol. 12, No. 2, pp.51–64.
- Dichter, E. (1985) 'What's in an image', *Journal of Consumer Marketing*, Vol. 2, No. 1, pp.75–81.

- Dutta, K., Umashankar, V. and Choi, G.A. (2008) 'A comparative study of consumers' green practice orientation in India and the United States: a study from the restaurant industry', *Journal of Foodservice Business Research*, Vol. 11, No. 3, pp.269–285.
- Folkes, V.S. and Kamins, M.A. (1999) 'Effects of information about firms' Ethical and unethical actions on consumers' Attitudes', *Journal of Consumer Psychology*, Vol. 8, No. 3, pp.243–259.
- Fombrun, C. and Shanley, M. (1990) 'What's in a name? Reputation building and corporate strategy', *Academy of Management Journal*, Vol. 33, No. 2, pp.233–258.
- Gonzalez-Benito, J. (2008) 'The effect of manufacturing pro-activity on environmental management: an exploratory analysis', *International Journal of Production Research*, Vol. 46, No. 24, pp.7017–7038.
- Green Growth Korea (2009) *Green Growth National Strategy*, GGR, Seoul.
- Haden, S.S.P., Oyler, J.D. and Humphreys, J.H. (2009) 'Historical, practical and theoretical perspectives on green management: an exploratory analysis', *Management Decision*, Vol. 47, No. 7, pp.1041–1055.
- Hilary, I.I. (2009) 'Materials extraction and use within the framework of global sustainable development', *Journal of Energy Engineering*, Vol. 135, No. 1, pp.1–2.
- Heras-Saizarbitoria, I., Landin, G.A. and Molina-Azorin, J.F. (2011) 'Do drivers matter for the benefits of ISO 14001', *International Journal of Operations and Production Management*, Vol. 31, No. 2, pp.192–215.
- Jang, K.Y. (2009) 'An empirical study on relationship between environmental management and sustainable development', *Environmental Policy*, Vol. 8, No. 3, pp.81–113.
- Jeong, H.B. (2015) 'Study on the relationship between CSR activities and financial performance of the liquor licensed wholesalers', *Asia-Pacific Journal of Business Venturing and Entrepreneurship*, Vol. 10, No. 6, pp.81–87.
- Ji, S.G. (2010) 'The impact of corporate social responsibility on brand equity', *Korean Journal of Business Administration*, Vol. 23, No. 4, pp.2251–2269.
- Joo, H.Y. and Choi, H.B. (2015) 'Effects of green management practices on performance: focusing on Chinese export manufacturing firms', *E-Trade Review*, Vol. 13, No. 2, pp.163–186.
- Jung, E.S., Park, B.J. and Kim, D.H. (2019) 'The effects of corporate social responsibility activity type and message type on corporate image', *Korean Review of Corporation Management*, Vol. 10, No. 4, pp.29–46.
- Kang, M.S. (2010) *Effects of Environmental Management on Firm Performance*, Published PhD thesis, Keimyung University, Dae-gu, South Korea.
- Kang, M.S., Choi, H.S. and Park, B.C. (2011) 'Effects of Environmental Management on Firm Performance', *Journal of the Korean Data and Information Science Society*, Vol. 22, No. 3, pp.523–536.
- Kim, C.H. (2005) *Empirical Study on the Effects of Adoption of the Environmental Management System to the Corporate Financial Performance in Korea*, Published PhD thesis, Chung-Ang University, Seoul, South Korea.
- Kim, J.G. (2016) 'Study on effects of economically-friendly green management of food service enterprises on corporate image', *International Journal of Tourism and Hospitality Research*, Vol. 27, No. 6, pp.471–486.
- Kim, J.K. (2013) 'Corporate institutional commitments and performance: does firm size matter?', *Journal of Environmental Policy and Administration*, Vol. 21, No. 1, pp.163–184.
- Kim, K.H. (2009) 'The proposal using promotional experience exhibition of eco-friendly architectural design, and eco-green for the creation of corporate identity', *Journal of Korean Society of Design Trend*, Vol. 25, pp.291–300.
- Kim, S.J. (2012) *The Effects of Green Consumers' Characteristics on Company Image and Purchase Intention of Green Marketing Sport Products Companies*, Published PhD thesis, Sookmyong Women's University, Seoul, South Korea.

- Kim, S.J. and Lee, S.I. (2016) 'The effects of green consumers characteristics on company image and purchase intention of green marketing sport products companies', *Korean Journal of Sports Science*, Vol. 25, No. 1, pp.739–759.
- Klein, J. and Dawar, N. (2004) 'Corporate social responsibility and consumers' attributions and brand evaluations in a product-harm crisis', *International Journal of Research in Marketing*, Vol. 21, No. 3, pp.203–217.
- Ko, Y.H. (2014) *An Empirical Study for the Effect of the Application of Green Management on Management Performance in Small, and Medium-sized Enterprise (SME)*, Published PhD thesis, Incheon National University, Incheon, South Korea.
- Ko, Y.H., Chung, Y.B. and Yoo, W.S. (2012) 'A study of the green management requisites effect on corporate performance', *Journal of the Society of Korea Industrial and Systems Engineering*, Vol. 35, No. 1, pp.93–100.
- Kotler, P. and Rath, G.A. (1984) 'Design: A powerful but neglected strategic tool', *Journal of Business Strategy*, Vol. 5, No. 2, p.16.
- Kunkel, J.H. and Berry, L.L. (1968) 'A behavioral conception of retail image', *Journal of Marketing*, Vol. 32, No. 4, pp.21–27.
- Lee, T.K., Yee, J.J. and Lee, S.H. (2013) 'Do social responsibility impact on social economy in sustainable factors?', *Journal of The Architectural Institute of Korea Planning and Design*, Vol. 29, No. 5, pp.241–250.
- Lee, Y.H. and Song, Y.J. (2019) 'An comparative study on foreign and domestic corporations' social responsibility association: focusing on the moderation effects of consumers' values about globalization and country of origin', *Korean Review of Corporation Management*, Vol. 10, No. 2, pp.89–116.
- Ma, Y., Hou, G. and Yin, Q. (2018) 'The sources of green management innovation: does internal efficiency demand pull or external knowledge supply push', *Journal of Cleaner Production*, Vol. 202, pp.582–590.
- McWilliams, A. and Siegel, D. (2001) 'Profit-maximizing corporate social responsibility', *The Academy of Management Review*, Vol. 26, No. 4, pp.504–505.
- Midilli, A., Dincer, I. and Ay, M. (2006) 'Green energy strategies for sustainable development', *Energy Policy*, Vol. 24, pp.3623–3633.
- Nunnally, J. (1978) *Psychometric Theory*, McGraw-Hill, New York.
- Oh, S.Y. and Lee, J.H. (2000) 'A study on the effect of corporate advertising types on the formation of corporate image', *Advertising Research*, No. 47, pp.117–141.
- Organization for Economic Co-operation and Development (OECD) (2010) *Green Growth Strategy Interim Report: Implementing our Commitment for a Sustainable Future, Meeting of the OECD Council at Ministerial Level*, OECD Publishing, Paris.
- Park, J.H., Sung, Y.D. and Lee, D.H. (2014) 'CEO experience and firm internationalization: the moderating effect of CEO power', *International Business Journal*, Vol. 25, No. 1, pp.29–58.
- Park, S.J., Jang, H.Y. and Lee, Y.R. (2012) 'The effect of corporate social responsibility on corporate image: large vs. small and medium sized company', *Korean Management Science Review*, Vol. 29, No. 1, pp.15–32.
- Park, S.R. and Park, H.S. (2013) 'A study of the effect of corporate social responsibility in mediated corporate image on corporate performance', *Korean Journal of Business Administration*, Vol. 26, No. 4, pp.961–985.
- Park, Y.K. (2015) 'The effect of CSR on corporate bond grade', *Journal of the Korean Data Analysis Society*, Vol. 17, No. 1, pp.279–291.
- Porter, M.E. and Kramer, M.R. (2006) 'Strategy and society: the link between competitive advantage and corporate social responsibility', *Harvard Business Review*, Vol. 84, No. 12, pp.78–92.
- Ra, Y.S. (2018) 'The relationship between corporate social performance and firm financial performance', *Korean Management Consulting Review*, Vol. 18, No. 2, pp.93–106.

- Schwartz, M.S. and Carroll, A.B. (2003) 'Corporate social responsibility: a three-domain approach', *Business Ethics Quarterly*, Vol. 13, No. 4, pp.503–530.
- Sen, S. and Bhattacharya, C.B. (2001) 'Does doing good always lead to doing better? Consumer reactions to corporate social responsibility', *Journal of Marketing Research*, Vol. 21, No. 3, pp.203-217.
- Till, B.D. and Nowak, L.I. (2000) 'Toward effective use of cause-related marketing alliances', *Journal of Product and Brand Management*, Vol. 9, No. 7, pp.474–484.
- United Nations Environment (UN) (2019) *Global Sustainable Development Report*, UN, New York.
- Wang, Z.M. and Wang, C.Z. (2016) 'Spatial analysis of China's R and D investment impact on environmental pollution', *Chinese Journal of Management*, Vol. 13, No. 11, pp.1710–1717.
- Winters, L.C. (1986) 'The effects of brand advertising on company image: implications for corporate advertising', *Journal of Advertising Research*, Vol. 26, No. 2, pp.54–59.
- Yoon, J.H. and Kim, Y.J. (2010) 'Operation of environmental management on corporate performance in small and medium sized firms', *Korean Association of Small Business Studies*, Vol. 22, No. 1, pp.63–91.
- Yoon, S.H., Ha, G.R. and Choi, S.B. (2011) 'A study on the management efficient of green energy industry', *Korean Business Education Review*, Vol. 26, No. 6, pp.65–90.