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# The Effect of Environmental Consciousness on Environmental Management

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**Abstract:** The objective of this study was to combine environmental, social, and governance (ESG) theories, namely instrumental, political, integrative, and ethical theories, to understand whether differences in environmental consciousness of managers led to different environmental management performance. A questionnaire survey on the environmental consciousness and environmental management of Taiwan's manufacturing firms was conducted and 261 samples were analyzed. The research model investigates the relevant relationships among the constructs by using a structural equation modeling approach. The results indicate that heightened political, integrative, and ethical environmental consciousness exert a positive influence on environmental management performance, whereas stronger instrumental environmental consciousness exerts a negative influence. The results of this study can assist companies in scrutinizing the effectiveness of their environmental management measures while also assisting investors in identifying companies with genuine environmental consciousness. The findings will do more to provide governing agencies with a reference when formulating environmental regulations.

**Keywords:** environmental consciousness; environmental management; environmental performance; ESG; sustainability

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## 1. Introduction

As society's view of the public good expands to include responsible corporate citizenship, profit performance alone no longer suffices as the sole measure of a company's performance. Nowadays issues of environmental protection and contributions to society are also included in evaluating overall corporate strategy, thus broadening the evaluation beyond the income statement [1,2]. As companies adopt the mantle of environmental, social, and governance (ESG) theories, their potential liabilities are no longer limited to operational costs. Investments in environmental protection and environmental management systems influence a company's competitiveness and strategic considerations [3–5]. When performed right, these investments not only reduce litigation and administrative costs, but also enhance long-term profitability and continuing development [6,7].

Environmental management can be defined as managing the impact of a company's products, processes, and organization on the environment, ecosystem, and culture during its business operations [8,9]. Hervani, Helms, and Sarkis (2005) [10] assessed the green supply chain and indicated that being environmentally conscious requires one to incorporate environmentally friendly designs, implement green procurement (using certified suppliers and purchasing raw materials that do not harm the environment), employ total quality environmental management (gauging internal performance and preventing pollution), use environmentally friendly packaging materials and transportation, and facilitate the reuse and recycling of expended products. It has been argued that the green economy resolves the struggles between society and the environment while creating new opportunities and challenges for companies of all scopes and in all industries. Lundgrena and Zhou (2017) [11]

stated that environmental management is an investment to reduce environmental impact, which may also affect a company's competitiveness, i.e., changes in productivity, and stimulate more efficient use of energy. Thus, when a company demonstrates better ESG performance, it will benefit from having a competitive and strategic advantage.

The natural resource-based view of the firm holds that a company's competitive advantages are grounded in a series of interconnected strategies regarding pollution prevention, product management, and sustainable development [12]. Arda, Bayraktar, and Tatoglu (2019) [13] found that environmental proactivity can fully mediate the relationship between integrated quality and environmental management and firm performance. Put simply, corporate environmental management integrates environmentally friendly concepts into corporate business activities, such as using green production methods to reduce the consumption of resources and energy, creating green products that limit environmental pollution, and facilitating sustainable development for individuals and the community.

Today, many companies strive to devise marketing strategies that involve corporate giving (philanthropy) and green images. However, some studies have stated that a corporation promoting its charity and environmental protection activities for public relations, advertising, and image marketing does not strengthen its corporate image; in contrast, such a campaign arouses public suspicion of a company's underlying motives [14]. Only when a company fulfills its social responsibilities will stakeholders be satisfied and its reputation improve [15]. Companies in good standing can attract customers, investors, and potential employees more easily [16]. In effect, environmental management confers a double advantage to companies, offering commercial and environmental benefits.

Margolis and Walsh (2003) [17] observed that the majority of previous studies used instrumental considerations to investigate corporate social responsibility, such as the relationship between corporate social responsibility and corporate performance. Later, Garriga and Melé (2004) [18] reviewed existing corporate social responsibility theories and categorized them by their focus on moral values, profits, social needs, and social performance. This led them to form four categories: instrumental theory, political theory, integrative theory, and ethical theory. They then advised that future research focus on these four theoretical bases and examine the association of these theoretical bases with performance. Existing literature on ESG clearly shows that the concept of ESG encompasses adherence to moral behavior, assurances of an increase in profitability, integration of a society's needs into a company's operations, and the exertion of a positive influence on society. However, the majority of these past studies involved normative and argumentative research; empirical research has focused solely on a single method or theory or questioned the effectiveness of other approaches.

Despite the sharp increase in research on environmental issues, few studies have taken multiple theories into consideration [19]. This study therefore attempts to explore issues of environmental consciousness and environmental management through the fundamental theories. The objective is to construct a clearer and more integrated theoretical system describing environmental management and to fill the gaps in existing literature. It is hoped that the results can assist companies in scrutinizing the effectiveness of their environmental management measures while also assisting investors in identifying companies with genuine environmental consciousness. This will do more to encourage companies to fulfill their environmental and social responsibilities and provide governing agencies with a reference when formulating environmental regulations.

The remainder of this paper is organized as follows: The second section comprises a literature review, and the third section describes the research design. The empirical evidence is discussed in the fourth section with additional analysis. Finally, the fifth section summarizes the study and its key findings.

## 2. Literature Review

Carroll (2016) [20] advocated that a company's social responsibilities include economic, legal, ethical, and philanthropic responsibilities. Although the fourth category presented by

each researcher differs in name, their connotations are similar. Each of the four components of responsibility is specific to different stakeholders, in terms of the different priorities that the stakeholder may be affected by.

Garriga and Melé (2004) [17] proposed instrumental theory to describe a company that perceives corporate social responsibility solely as a financial tool and values-related investments only in the context of improving its financial performance. This point of view originates from the agency theory, which upholds that companies take into account only the managers and shareholders within their organizations and consider profit creation to be the primary duty of their managers. Freeman (2010) [21] presented a more inclusive stakeholder theory, which emphasizes that stakeholders provide vital resources, or contributions, to a firm, which satisfy stakeholder demands. The salient argument behind stakeholder theory is that companies need to ensure their survival and continued success by satisfying stakeholder demands or else face severe criticism from their stakeholders [22].

Under instrumental theory, a company is responsible for satisfying shareholder needs; thus, it considers social responsibilities as operational goals and bases its operations on the expectations of its shareholders. Performing ESG activities to earn profits is a common method employed by companies [23]. Many past studies have shown that effective ESG practices can lead to strong financial performance [13,16] and high market value [11]. It has been proposed that ESG can have the following economic strategic objectives: maximizing shareholder value, which mostly centers on short-term performance gauged against market returns; achieving competitive advantages, in which long-term performance is measured by long-term profits; and cause-related marketing, in which companies promote good deeds and positive feedback to gain competitive advantage [17]. ESG can assist companies in creating substantial benefits, a view receiving more attention as competition grows more intense. Among many companies, the management of ESG activities has taken priority over other considerations [24]. Instrumental theory is the most widely applied theoretical basis in ESG research, perhaps because it emphasizes that the purpose of fulfilling ESG is to enhance a company's competitive advantage and value-creating capacity with the ultimate goal of optimizing the interests of shareholders [25]; therefore, this study adopts shareholder interest maximization strategies as its theoretical basis.

Political theory emphasizes the social power of a company as a for-profit organization whose operations rely on more than just the principles of capitalism. In addition to having economic power, companies are able to demand that governments alter market regulations, which means they can influence politics. As a result, the general public forms expectations of these social entities. On account of this double power effect, interdependence exists between such companies and society [26], in which the latter has precise expectations regarding the proper behavior of the former. Furthermore, political theory holds that these companies exercise power responsibly and participate in social collaboration, which means that their operational strategies should promote environmental and social development of local communities.

Political theory can be further divided into corporate constitutionalism, integrative social contract theory, and corporate citizenship [27–29]. Stressing the relationship between social responsibility and social power, Lee (2011) [30] combines institutional and stakeholder theories to explain how companies choose their corporate social responsibility strategy. Companies that cannot bear their environmental and social responsibilities will inevitably lose their social power. Furthermore, companies can use their social power to protect their stakeholders from unreasonable organizational powers. This is referred to as corporate constitutionalism. Donaldson and Dunfee (1994) [31] observed that companies have social contracts, in which they offer customers, employees, and other members of society certain benefits in exchange for power. Donaldson and Dunfee (1999) [32] extended this viewpoint and developed the integrative social contracts theory, which holds that microsocial contracts established between companies and various economic communities contain consensual agreements that do not violate the universal rights defined by macrosocial contracts. Corporate citizenship originates from the fact that the survival and growth

of companies rely on the social costs incurred by the general public. Thus, in addition to making a profit, companies are also obligated to play the part of good corporate citizen. As they offer value to society through their core operations, they must also pledge to uphold their obligations to society and act as a public role model in the practice of social ethics. Corporate citizenship involves a common voluntary operational strategy that operates within a specific scope [33]; thus, it is easy to measure for the purposes of this study.

Integrative theory indicates that companies are dependent on society, and for this reason, management practices should include identifying environmental issues with an emphasis on understanding and responding to different public interests [34], combining social value with corporate operation activities, and devising integrative management strategies. When corporate value systems are consistent with the surrounding social value system, the participating companies can gain legitimacy or prestige. In contrast, inconsistency between the two systems can pose substantial threats to a company's legitimacy [17]. Thus, ESG is determined by the demands of the social value system at the time, and the perspective taken by a company's environmental and social responsibilities should be converted into a perspective of public responsibility [35]. Integrative theory corresponds to the purpose of the normative stakeholder theory. Based on this theory, in addition to paying attention to shareholders, companies must also show concern for their employees, customers, communities, and the stakeholders. All stakeholders affected by the company should have the right to participate in corporate decisions, and the management should be responsible for serving the affected stakeholders [36]. Therefore, a company's goal should be to protect the interests of all its stakeholders rather than just its shareholders. Their core concepts of integrative theory include the corporate social performance model presented by Wartick and Cochran (1985) [37], which integrates the principles and directive behavior of ESG and responds to social demands as well as to policy development involving social issues. Later, Wood (1991) [38] transformed the concepts of the corporate social performance model into three interrelated aspects: driving principles, behavioral processes, and significant efficacy. Wood's study raises several issues worthy of reflection, such as how stakeholders might be identified, how the social demands of different stakeholders might be comprehended, how to manage the conflicts or potential conflicts that might occur among stakeholders, and finally, how society can determine whether a company's performance meets social demands. In view of these reflections, integrative theory focuses on issues management, public responsibilities, stakeholders, and corporate social performance. For instance, Buysse and Verbeke (2003) [39] used the stakeholder perspective to explain that the green demands of stakeholders influence a company's environmental strategies. Theories based on stakeholders are the most common, as it is commonly agreed that taking into account the interests of corporate stakeholders can benefit a company's governance and promote its interests.

Ethical theory examines the relationship between companies and society from the perspective of moral values. Companies must be aware that all their actions to fulfill their ESG principles must comply with a code of ethics. Freeman (2010) [20] stated that due to moral principles, companies are not only responsible for the demands of society, but also for those of their legitimate stakeholders; they must satisfy the demands of certain groups in society (their stakeholders) rather than merely their shareholders. The normative stakeholder theory assumes that stakeholders have valid, normative claims on companies and that individuals or groups possess legitimate interests in the procedural and/or substantial aspects of corporate activities [25]. The stewardship theory has been proposed, emphasizing that managers should have a sense of mission with regard to morality and endeavor to do what is right. They should respond to their stakeholders according to ethical standards regardless of whether the results of the decision have adverse effects on a company's financial performance [40]. The absolute demands on corporate behavior also include universal rights and sustainable development, concepts that are widely advocated on the international level. The social responsibility of universal rights is centered around human and labor rights. Although standards in this respect remain

inconsistent, the Universal Declaration of Human Rights and the International Labour Organization Convention serve as the primary foundation. The Bruntland Report of 1987 is perhaps most representative of sustainable development in that it discusses the social responsibility of protecting the natural environment. Later, Elkington (2006) [41] again stressed the triple bottom line: while the single bottom line focuses on the management strategies involved in the financial aspects or economic benefits of a business, the triple bottom line encompasses the social aspects of maintaining and developing social and human capital and environmental factors, which involve complying with environmental laws and regulations and seeking means to utilize resources and process waste. Henriques and Sadorsky (1996) [42] measured the environmental ethics of companies, contending that they must implement the vision, policies, and projects designed by environmental protection agencies in order for companies to realize their environmental responsibilities.

There is some overlap among the four theories. They all indicate that when a company is aware of its environmental and social responsibilities, whether it is facing stakeholder demands or moral obligations, it is impelled to engage in related activities, one of which is environmental management. Menguc, Auh, and Ozanne (2010) [43] stated that even if environmental and social standards are not widely accepted as legal standards that regulate corporate behavior, corporate managers regard ESG practice as a crucial consideration when striving to achieve strong financial performance as it pertains to resource planning; therefore, this study applies these theoretical bases regarding ESG to the issue of environmental management in Taiwan as a means of exploring how environmental consciousness forms in companies and how such consciousness influences environmental management.

## 3. Research Design

### *3.1. Statistical Method*

This paper employed structural equation modeling (SEM) to test the theoretical model. SEM is a multivariate data analysis method for analyzing complex relationships among sets of constructs, incorporating the use of moderators and mediators as necessary. The proposed conceptual model was designed to measure causal relationships among hypothetical constructs established according to prior literature.

### *3.2. Measures of Constructs*

The constructs outlined in the present research framework included environmental consciousness and environmental management. From the instrumental, political, integrative, and ethical theoretical bases of ESG, we developed measures for each construct based on related literature.

#### 3.2.1. Instrumental Theory: Shareholder Wealth Maximization

Singhapakdi, Bohlen, and Diamantopoulos (1996) [44] asserted that managerial perceptions of ethical and social responsibility may be a determinant in an organization's performance. We therefore referred to scales designed to measure the perceived role of ethics and social responsibility (PRESOR) developed by Kraft and Jauch (1992) [45] and Axinn et al. (2004) [46] to understand the perspectives of shareholders. The scale contains 4 items emphasizing that the main purpose of a company's existence is to maximize shareholder value. With the highest guiding principle of a company being to expand the interests of the shareholders and meet their demands, the objective of implementing environmental management is to create profit, and social responsibility and ethics are of less importance. We revised the scale based on relevant literature, and responses to the items were measured using a seven-point Likert scale, with 1 indicating "completely disagree" and 7 "completely agree".

#### 3.2.2. Political Theory: Corporate Citizenship

Davenport (2000) [47] proposed three specific constructs to assess whether a company is fulfilling its obligations as a corporate citizen. These constructs guide companies in

displaying corporate citizenship behavior and serve as standards for corporate social performance. The three constructs indicate that companies should maintain good operations for the sake of their stakeholders, continue to sincerely communicate with their stakeholders, and disclose their value and operations honestly. Based on the unique environment in Taiwan and existing literature concerning corporate citizenship, we revised the three constructs proposed by Davenport (2000) [47] to develop a more suitable corporate citizenship scale. For each item, respondents were asked to indicate their degree of agreement using a seven-point Likert scale in which point 1 means "completely disagree" and 7 "completely agree".

#### 3.2.3. Integrative Theory: Stakeholder Theory

In this portion, we adopted the PRESOR scale developed by Kraft and Jauch (1992) [45] to measure integrative aspects from the perspective of stakeholders, which hold that corporations should consider social responsibility and ethics as their business goal in order to meet public demands. In this case, the focus is not on the traditional objective of maximizing shareholder profits. Rather, caring for society and solving its problems take on a more significant role. Again, we revised the question items based on the unique environment in Taiwan and relevant literature. For each item, respondents were asked to indicate their degree of agreement using a seven-point Likert scale in which point 1 means "completely disagree" and 7 "completely agree".

#### 3.2.4. Ethical Theory: Environmental Ethics

The environmental ethics of companies accentuate proactive environmental management [48], which in turn influences the environmental activities and operations of companies [42,44,49,50]. With this awareness, corporations must have clear environmental policies and suitable budgets for environmental investments and procurement, they must fully integrate their environmental missions, visions, and plans with marketing, and then incorporate them into their organizational culture. For this portion, we made slight revisions to the environmental ethics scale proposed by Chang (2011) [51]. The scale adopted the seven-point Likert scale in which point 1 denoting "very low" and 7 denoting "very high".

#### 3.2.5. Environmental Management

To measure environmental management, we referred to the ISO 14,031 standards for environmental performance evaluation, which encompass the management systems and operation systems of an organization as well as its environmental surroundings. The ISO14031 standards include environmental performance indicators (EPIs), which can be further divided into management performance indicators (MPIs) and operation performance indicators (OPIs). The former directly reflect the outcomes of efforts in management performance, while the latter reflect the operation system of the organization, including the design and operation of factory buildings, equipment, raw materials, and energy supply and demand. Thus, operation performance primarily involves an organization's energy and resource efficiency, waste reduction (air pollution, water pollution, toxins, and carbon dioxide), and process management. In contrast, management performance includes internal and external assessments. The external evaluation examines whether an organization can improve its relationships with the outside community to improve its corporate image, and the internal evaluation involves whether an organization can reduce production costs, increase profits, improve internal management and communication, and grasp current laws and regulations. In addition, we referred to items that the Environmental Protection Administration (EPA) uses to evaluate companies for environmental rewards and established four categories for environmental management performance: resource conservation and carbon reduction measures, waste reduction and recycling, green products or services, and pollution prevention measures. The scale adopted the seven-point Likert scale in which point 1 denoting "completely disagree" and 7 "completely agree".

### *3.3. Control Variables*

To give back to society and make up for negative impacts on the environment, different industries display varying environmental management behaviors due to different degrees of sensitivity to environmental issues. Investments in equipment for pollution prevention are substantial, long-term, and routine capital expenditures. Thus, based on the proportions that a company spent on pollution prevention expenditures, we divided participating companies into industries with high and low environmental sensitivity. The proxy variable for industries with high environmental sensitivity equaled 1 while 0 was assigned to companies with low environmental sensitivity.

### *3.4. Sample and Data Collection*

At present, a comprehensive environmental management database does not exist in Taiwan. For this reason, we employed a questionnaire to better understand whether environmental consciousness in companies effectively enhances environmental performance. Before the formal questionnaire was distributed, it was examined by instructors at the EPA as well as other experts in environmental management to ensure validity, clarity, rationality, and relevance. We sent the questionnaire to 10 randomly selected manufacturers by e-mail as a pilot test, and then revised the questionnaire based on their suggestions. In total, we obtained 44 samples for the pilot test. We then sent the formal questionnaire to the managers and supervisors associated with environmental protection at the top 1000 manufacturing companies in Taiwan, excluding those that participated in the pilot test. The questionnaires were distributed by mail and filled out anonymously.

### *3.5. Participant Data and Reliability and Validity Analyses*

In total, 300 questionnaires were returned. Eliminating the invalid questionnaires, we obtained 261 valid questionnaires in all, which presented a response rate of 97%. A total of 73% of the participants were male, and 27% were female. One out of four participants were between the ages of 26 and 35; 37% of the participants were between the ages of 26 and 46; and 38% of the participants presented an average age of 46. One third of the participants had less than 5 years of work experience, 26% possessed between 6 years and 10 years of work experience, 22% had between 11 and 20 years of work experience, and 19% had over 21 years of work experience. Only 18% of the companies represented were under 10 years of age; 46% of the companies were between 11 and 30 years of age, and 36% of the companies were over 31 years of age. A total of 32% of the companies had less than NTD 5 billion, 24% of the companies had between NTD 5.1 billion and NTD 15 billion, and 44% had more than NTD 12.1 billion. In terms of environmental sensitivity, 23% of the corporations were in industries with high environmental sensitivity, whereas 77% of the corporations were in industries with low environmental sensitivity.

Table 1 presents the results for the reliability and validity analyses. As can be seen, the factor loadings of the constructs range between 0.5 and 0.95, thereby presenting a satisfactory goodness-of-fit for the model. The Cronbach's $\alpha$ is greater than 0.8, which means that the indicator items for the latent variables present good internal consistency. Furthermore, the average variance extracted (AVE) for the latent variables is greater than 0.5, indicating that on average, the observed variables can explain the latent variables to a fairly high extent. Thus, on the whole, the reliability and validity of the questionnaire in this study meet requirements and the variables can be assumed to reliably represent the constructs that we wished to measure.

**Table 1.** Reliability and validity analysis of the individual item.

| Constructs | Items | Factors Loading | Stand. Error | t-Value | Goodness-of-Fit | Cronbach's $\alpha$ | AVE |
|---|---|---|---|---|---|---|---|
| Environmental Consciousness | | | | | | | |
| Instrumental theory | 1. To remain competitive in a global environment, business firms will must disregard ethics and social responsibility. | 0.906 *** | 0.229 | 19.100 | GFI = 0.997; AGFI = 0.987; RMR = 0.013; RMSEA = 0.00; CFI = 1.000; NFI = 0.998; IFI = 1.000 | 0.908 | 0.712 |
| | 2. The most important concern for a firm is making a profit, even if it means bending or breaking the rules. | 0.894 *** | 0.289 | 18.718 | | | |
| | 3. If survival of a business enterprise is at stake, then you must forget about ethics and social responsibility. | 0.791 *** | 0.328 | 15.481 | | | |
| | 4. Efficiency is much more important to a firm than whether or not the firm is seen as ethically or socially responsible. | 0.775 *** | 0.325 | 15.030 | | | |
| Political theory | 1. The company engages in commercial activities that influence stakeholders with fairness and honesty. | 0.515 *** | 0.254 | 8.737 | GFI = 0.990; AGFI = 0.969; RMR = 0.021; RMSEA = 0.041; CFI = 0.996; NFI = 0.987; IFI = 0.996 | 0.840 | 0.522 |
| | 2. The company discloses its value and operations with honesty. | 0.913 *** | 0.191 | 18.698 | | | |
| | 3. The company exchanges opinions with its stakeholders frequently and honestly. | 0.819 *** | 0.188 | 16.000 | | | |
| | 4. The company has vowed to commit to sustainable development. | 0.695 *** | 0.202 | 12.724 | | | |
| | 5. The company applies the highest behavioral standards to all employees. | 0.596 *** | 0.296 | 10.453 | | | |
| Integrative theory | 1. Good ethics are often good business. | 0.921 *** | 0.186 | 18.821 | GFI = 0.985; AGFI = 0.926; RMR = 0.026; RMSEA = 0.105; CFI = 0.988; NFI = 0.984; IFI = 0.988 | 0.849 | 0.594 |
| | 2. The company considers ethics and social responsibility when formulating plans and establishing goals. | 0.825 *** | 0.223 | 16.010 | | | |
| | 3. Social responsibility and profitability can be compatible. | 0.758 *** | 0.238 | 14.415 | | | |
| | 4. The ethics and social responsibility of a firm is essential to its long-term profitability. | 0.521 *** | 0.290 | 8.846 | | | |
| Ethical theory | 1. All the company's employees understand the company's environmental policies and regulations. | 0.836 *** | 0.256 | 16.756 | GFI = 0.981; AGFI = 0.955; RMR = 0.025; RMSEA = 0.053; CFI = 0.992; NFI = 0.983; IFI = 0.993 | 0.906 | 0.617 |
| | 2. The company's budget includes environmental investments and green procurement. | 0.824 *** | 0.239 | 16.368 | | | |
| | 3. The environmental control system of the company was established with environmental ethics and legal standard procedures for the employees to follow. | 0.783 *** | 0.233 | 15.170 | | | |
| | 4. The company's marketing integrates environmental protection projects and visions. | 0.775 *** | 0.234 | 14.952 | | | |
| | 5. The company's contribution to environmental protection already greatly exceeds legal, ethical, and public expectations. | 0.750 *** | 0.297 | 14.260 | | | |
| | 6. The company provides safe and reliable green products and services to consumers. | 0.740 *** | 0.250 | 13.995 | | | |

**Table 1.** *Cont.*

| Constructs | Items | Factors Loading | Stand. Error | t-Value | Goodness-of-Fit | Cronbach's α | AVE |
|---|---|---|---|---|---|---|---|
| Environmental Management | | | | | | | |
| Management performance | 1. The company values the achievement of environmental goals. | 0.903 *** | 0.215 | 19.034 | GFI = 0.989; AGFI = 0.975; RMR = 0.016; RMSEA = 0.008; CFI = 1.000; NFI = 0.991; IFI = 1.000 | 0.902 | 0.608 |
| | 2. The company has increased recycling. | 0.803 *** | 0.185 | 15.834 | | | |
| | 3. The company has reduced response time when dealing with environmental incidents. | 0.778 *** | 0.227 | 15.089 | | | |
| | 4. The company has reduced the complaints and damage claims from nearby residents due to impact on the environment. | 0.776 *** | 0.212 | 15.060 | | | |
| | 5. The company has enhanced the competitiveness of its green products and services. | 0.742 *** | 0.269 | 14.108 | | | |
| | 6. The company strictly follows environmental laws and regulations. | 0.656 *** | 0.185 | 11.951 | | | |
| Operation performance | 1. The company has improved toxic chemical operations. | 0.875 *** | 0.272 | 19.797 | GFI = 0.996; AGFI = 0.988; RMR = 0.009; RMSEA = 0.000; CFI = 1.000; NFI = 0.996; IFI = 1.000 | 0.896 | 0.636 |
| | 2. The company has reduced noise pollution. | 0.860 *** | 0.270 | 18.486 | | | |
| | 3. The company has improved measures to prevent water pollution. | 0.817 *** | 0.264 | 17.539 | | | |
| | 4. The company has increased efficient raw material use. | 0.730 *** | 0.274 | 17.508 | | | |
| | 5. The company has improved measures for water conservation. | 0.687 *** | 0.310 | 16.181 | | | |

*** $p < 0.001$; GFI: goodness-of-fit index; AGFI: adjusted GFI; RMR: root mean squares residual; RMSEA: root mean square error of approximation; CFI: comparative fit index; NFI: normed fit index; IFI: incremental fit index.

### *3.6. Descriptive Statistics*

Table 2 lists the means, standard deviations, correlation coefficients, and square roots of the AVE for the various constructs. Table 2 shows that of the four theory categories, political theory scored the highest, followed by integrative theory and ethical theory and finally instrumental theory. This result indicates that companies are fulfilling their obligations as corporate citizens. At the same time, they are aware that they have influence over public environmental issues and social procedures and that taking the lead in fulfilling ethical obligations toward environmental protection protects the interests of stakeholders and satisfies the demands of society. Furthermore, the square roots of the AVE for the constructs were all greater than the correlation coefficients among them, which means that the constructs all meet judgment criteria for discriminant validity.

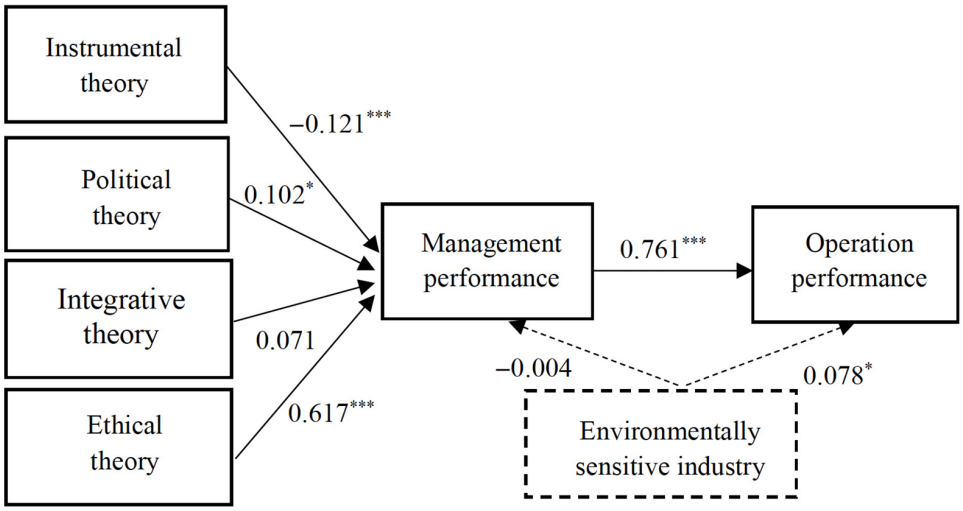
**Table 2.** Descriptive statistics, correlation coefficients, and square root AVE of constructs.

| Constructs | Mean | Standard Deviation | Correlation and Square Root AVE | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | 1 | 2 | 3 | 4 | 5 | 6 |
| 1. Instrumental theory | 2.064 | 1.16 | 0.844 | | | | | |
| 2. Political theory | 6.005 | 0.723 | −0.514 *** | 0.722 | | | | |
| 3. Integrative theory | 5.966 | 0.803 | −0.563 *** | 0.683 *** | 0.771 | | | |
| 4. Ethical theory | 5.688 | 0.91 | −0.437 *** | 0.703 *** | 0.591 *** | 0.785 | | |
| 5. Management performance | 5.971 | 0.778 | −0.483 *** | 0.647 *** | 0.574 *** | 0.773 *** | 0.780 | |
| 6. Operation performance | 6.049 | 0.779 | −0.348 *** | 0.478 *** | 0.465 *** | 0.639 *** | 0.764 *** | 0.797 |

*** $p < 0.001$; square root of AVE on the diagonal in bold.

## 4. Results and Discussion

We conducted SEM analysis using maximum likelihood estimation. We employed the goodness-of-fit indicators to determine the external quality of the hypothetical model, including absolute fit measures and incremental (correlation) fit indices. Figure 1 exhibits the path analysis framework for environmental consciousness and environmental performance.




***, * $p < 0.001$, and 0.10.

**Figure 1.** Standardized estimates of the path coefficients.

Table 3 contains the results of the path analysis. The chi-square value of the overall goodness-of-fit test for the hypothetical model has four degrees of freedom, $\chi^2 = 7.196$ and $p = 0.126$, which means a good fit between the theoretical model and the sample data. As for the other goodness-of-fit indices, $\chi^2/df = 1.799$, GFI = 0.993, AGFI = 0.939, RMR = 0.010, RMSEA = 0.055, CFI = 0.997, NFI = 0.994, and IFI = 0.997, all of which indicate a satisfactory goodness-of-fit in the overall model.

**Table 3.** Structural equation modeling analysis.

| Path | Coefficient | t-Value |
|---|---|---|
| Instrumental theory → Management performance | −0.121 *** | −2.637 |
| Political theory → Management performance | 0.102 * | 1.721 |
| Integrative theory → Management performance | 0.071 | 1.296 |
| Ethical theory → Management performance | 0.617 *** | 11.488 |
| Management performance → Operation performance | 0.761 *** | 19.136 |
| Environmentally sensitive industry → Management performance | −0.004 | −0.106 |
| Environmentally sensitive industry → Operation performance | 0.078 * | 1.956 |
| $\chi^2/df$ = 1.799; GFI = 0.993; AGFI = 0.939; RMR = 0.010; RMSEA = 0.055; CFI = 0.997; NFI = 0.994; IFI = 0.997 | | |

***, * $p < 0.001$, and 0.10.

Table 4 presents the direct effects, indirect effects, and total effects of the factors. To facilitate our observation of the effects among the research variables, we adopted bootstrapping to examine the indirect effects. For confidence interval estimation, we used the bias-corrected percentile method. After testing the overall models of the various constructs, we found that environmental consciousness based on instrumental and ethical theories had the greatest direct effect on environmental management performance and exerted indirect effects on environmental performance via environmental management performance. Environmental consciousness based on political theory only produced direct effects on environmental management performance.

**Table 4.** Direct, indirect, and total effects in structural equation modeling.

| Path | Direct Effects | Indirect Effects | Total Effects |
|---|---|---|---|
| Instrumental theory → Management performance | −0.121 *** | | −0.121 |
| Political theory → Management performance | 0.102 * | | 0.102 |
| Integrative theory → Management performance | 0.071 | | 0.071 |
| Ethical theory → Management performance | 0.617 *** | | 0.617 |
| Instrumental theory → Operation performance | | −0.092 ** | −0.092 |
| Political theory → Operation performance | | 0.078 | 0.078 |
| Integrative theory → Operation performance | | 0.054 | 0.054 |
| Ethical theory → Operation performance | | 0.469 *** | 0.469 |
| Management performance → Operation performance | 0.761 *** | | 0.761 |
| Environmentally sensitive industry → Management performance | −0.004 | | −0.004 |
| Environmentally sensitive industry → Operation performance | 0.078 * | −0.003 | 0.075 |

***, **, * $p < 0.001$, 0.05, and 0.10.

Environmental consciousness based on integrative theory, however, presented no significant effects, neither direct nor indirect, on environmental management performance. We infer that the primary aim of integrative environmental consciousness is to prevent negative effects for stakeholders, which means that companies tend to protect the interests of their stakeholders in economic, social, environmental, and ethical aspects. Thus, on the environmental social responsibility level, we discovered no significant differences. Finally, environmental management performance presented direct and positive effects on environmental performance. With regard to the control variables, the results also revealed that industries with different degrees of environmental sensitivity presented significant differences in environmental performance.

Environmental consciousness based on political and ethical theory exerted a significant and positive influence on environmental management performance, the values of the direct effects being 0.102 ($p = 0.085$) and 0.617 ($p < 0.01$), respectively. Ethical environmental consciousness displayed the greatest influence on environmental management performance. A negative association exists between environmental consciousness based on instrumental theories and environmental management performance, the value of the direct effect being −0.121 ($p < 0.01$). Although a positive association exists between environmental consciousness based on integrative theory and environmental management performance, the value of the direct effect was 0.071 ($p = 0.195$), which is not significant.

Based on the negative association between instrumental environmental consciousness and environmental management performance, we conclude that if companies blindly gauge the returns of environmental investments only from a financial perspective, they will be unable to commit to environmental management activities effectively. This is because at present there are no reliable means of evaluating and measuring the returns of environmental investments, which may also require a long period of time before manifesting. Consequently, profit-oriented companies are less willing to invest their resources into environmental management activities, and in turn, they cannot effectively enhance their environmental management performance.

Political environmental consciousness deems that in addition to making a profit, corporate operations should also fulfill environmental responsibilities to society through core operation activities and by proactively participating in social environmental activities. Such companies allocate their resources to environmental management activities and impartially dedicate themselves to corporate activities that benefit the environment, such as improving internal environmental management, communicating environmental information, and abiding by the environmental laws and regulations of relevant government authorities.

High ethical environmental consciousness indicates that a company believes it must satisfy more than just the interests of shareholders. Companies demonstrating ethical environmental consciousness respond to their stakeholders according to social ethical norms whether their environmental investments exert a positive or negative influence on their fi-

nancial performance. Based on moral principles, such companies believe that it is normal to allocate resources to environmental investments, incorporate environmental protection into corporate culture and activities, and fully commit to environmental protection activities, thus developing corporate environmental ethics and instilling concepts of sustainability.

## 5. Conclusions

This study employed SEM to examine the relationship between environmental consciousness and environmental management vis-à-vis the influence of an institutional environment using four ESG theories: instrumental, political, integrative, and ethical [18]. The data for this study were collected from a questionnaire survey of the top 1000 manufacturing companies in Taiwan. The findings of the study are as follows:

Environmental consciousness based on political and ethical theories has a significant positive effect on environmental management performance. Among them, ethical environmental consciousness had the greatest effect on environmental management performance. Furthermore, the environmental consciousness based on instrumental theory has a significant negative effect on environmental management performance, suggesting that if companies emphasize the financial perspective of the return on environmental investments, they are less willing to devote resources to environmental management activities and thus cannot effectively improve environmental management performance.

Political environmental consciousness believes that in addition to making profits, companies should also commit to their corporate social responsibilities and participate actively to social and environmental improvement activities [27–29]. In addition, ethical environmental consciousness believes that environmental and social responsibility is not only limited to the interests of shareholders but should also respond to stakeholders with ethics and code of business conduct regardless of whether the results of environmental investments have a negative impact on the financial performance [42,43]. Therefore, based on ethical theory, we believe that companies should allocate resources to environmental activities, incorporate environmental and social responsibility into their corporate culture, make commitments, and achieve sustainable development goals.

The contribution of this study is twofold: This paper contributes to the literature by integrating multiple ESG theories to exam the relationship between the environmental consciousness and environmental performance. while most of the existing literature focuses on the relationship between a single theory and environmental management. Second, this study provides a more comprehensive explanation and analysis of environmental management that can help companies develop ESG strategies to gain a competitive advantage.

This study was limited by the fact that the questionnaire method was used to collect primary information. Previous experience has shown that when participants self-report on sensitive issues (corporate ethics were involved), questionnaire results can easily be affected by missing or incorrect responses that were provided to meet social expectations rather than to provide truthful answers that reflected current corporate conditions. Furthermore, the study was unable to have complete control over the collection of the questionnaires. As a result, the data collected may be concentrated on samples with similar characteristics, which limit the efficacy of a study's explanatory power.

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## References


1. Brown, H.S.; de Jong, M.; Lessidrenska, T. The rise of the global reporting Initiative: A case of institutional entrepreneurship. *Env. Polit.* **2009**, *18*, 182–200. [CrossRef]
2. Deetz, S. Corporate governance, corporate social responsibility, and communication. In *The Debate Over Corporate Social Responsibility*; May, S., Cheney, G., Roper, J., Eds.; Oxford University Press: New York, NY, USA, 2007; pp. 267–278.
3. Porter, M.E.; Kramer, M.K. Strategy and society: The link between competitive advantage and corporate social responsibility. *Harv. Bus. Rev.* **2006**, *84*, 78–92. [PubMed]
4. Lins, K.V.; Servaes, H.; Tamayo, A. Social capital, trust, and firm performance: The value of corporate social responsibility during the financial crisis. *J. Financ.* **2017**, *72*, 1785–1824. [CrossRef]
5. Astuti, P.D.; Datrini, L.K. Green competitive advantage: Examining the role of environmental consciousness and green intellectual capital. *Manag. Sci. Lett.* **2021**, *11*, 1141–1152. [CrossRef]
6. Wagner, M. The link of environmental and economic performance: Drivers and limitations of sustainability integration. *J. Bus. Res.* **2015**, *68*, 1306–1317. [CrossRef]
7. Chen, Y.S. The positive effect of green intellectual capital on competitive advantages of firms. *J. Bus. Ethics* **2008**, *77*, 271–286. [CrossRef]
8. Winn, S.F.; Roome, N.J. R&D management response to the environment: Current theory and implications to practice and research. *RD Manag.* **1993**, *23*, 147–160. [CrossRef]
9. Testa, F.; Gusmerottia, N.M.; Corsini, F.; Passetti, E.; Iraldo, F. Factors affecting environmental management by small and micro firms: The importance of entrepreneurs' attitudes and environmental investment. *Corp. Soc. Responsib. Environ. Manag.* **2016**, *23*, 373–385. [CrossRef]
10. Hervani, A.A.; Helms, M.M.; Sarkis, J. Performance measurement for green supply chain management. *Benchmarking* **2005**, *12*, 330–353. [CrossRef]
11. Lundgrena, T.; Zhou, W. Firm performance and the role of environmental management. *J. Environ. Manag.* **2017**, *203*, 330–341. [CrossRef]
12. Hart, S.L.; Dowell, G. A natural-resource-based view of the firm: Fifteen years after. *J. Manag.* **2011**, *37*, 1464–1479. [CrossRef]
13. Arda, O.A.; Bayraktar, E.; Tatoglu, E. How do integrated quality and environmental management practices affect firm performance? Mediating roles of quality performance and environmental proactivity. *Bus. Strategy Environ.* **2019**, *28*, 64–78. [CrossRef]
14. Moir, L.; Taffler, R. Does corporate philanthropy exist? Business giving to the arts in the U.K. *J. Bus. Ethics* **2004**, *54*, 149–161. [CrossRef]
15. Javed, M.; Rashid, M.A.; Hussain, G.; Ali, H.Y. The effects of corporate social responsibility on corporate reputation and firm financial performance: Moderating role of responsible leadership. *Corp. Soc. Responsib. Environ. Manag.* **2020**, *27*, 1395–1409. [CrossRef]
16. Deephouse, D.; Suchman, M. Legitimacy in organizational institutionalism. In *The Sage Handbook of Organizational Institutionalism*; Greenwood, R., Oliver, C., Sahlin, K., Suddaby, R., Eds.; Sage: Oxford, UK, 2008; pp. 49–77. [CrossRef]
17. Margolis, J.D.; Walsh, J.P. Misery loves companies: Rethinking social initiatives by business. *Adm. Sci. Q.* **2003**, *48*, 268–283. [CrossRef]
18. Garriga, E.; Melé, D. Corporate social responsibility theories: Mapping the territory. *J. Bus. Ethics* **2004**, *53*, 51–71. [CrossRef]
19. Gillan, S.L.; Koch, A.; Starks, L.T. Firms and social responsibility: A review of ESG and CSR research in corporate finance. *J. Corp. Financ.* **2021**, *66*, 1–16. [CrossRef]
20. Carroll, A.B. Carroll's pyramid of CSR: Taking another look. *Int. J. Corp. Soc. Responsib.* **2016**, *1*, 1–8. [CrossRef]
21. Freeman, R.E. *Strategic Management: A Stakeholder Approach*; Pitman: Boston, MA, USA, 2010.
22. Ferrell, A.; Liang, H.; Renneboog, L. Socially responsible firms. *J. Financ. Econ.* **2016**, *122*, 585–606. [CrossRef]
23. McWilliams, A.; Siegel, D. Corporate social responsibility and financial performance: Correlation or misspecification? *Strateg. Manag. J.* **2000**, *21*, 603–609. [CrossRef]
24. Windsor, D. The future of corporate social responsibility. *Int. J. Organ. Anal.* **2001**, *9*, 225–256. [CrossRef]
25. Brown, J.A.; Forster, W.R. CSR and stakeholder theory: A tale of Adam Smith. *J. Bus. Ethics* **2013**, *112*, 301–312. [CrossRef]
26. Clarkson, B.E. A stakeholder framework for analyzing and evaluating corporate social performance. *Acad. Manag. Rev.* **1995**, *20*, 92–117. [CrossRef]
27. Carroll, A.B. Corporate Social Responsibility. *Bus. Soc.* **1999**, *38*, 268–295. [CrossRef]
28. Waddock, S. Parallel universes: Companies, academics, and the progress of corporate citizenship. *Bus. Soc. Rev.* **2004**, *109*, 5–42. [CrossRef]
29. Matten, D.; Crane, A. Corporate citizenship: Toward an extended theoretical conceptualization. *Acad. Manage. Rev.* **2005**, *30*, 166–179. [CrossRef]
30. Lee, M.P. Configuration of external influences: The combined effects of institutions and stakeholders on corporate social responsibility strategies. *J. Bus. Ethics* **2011**, *102*, 281–298. [CrossRef]
31. Donaldson, T.; Dunfee, T. Toward a unified conception of business ethics: Integrative social contracts theory. *Acad. Manage. Rev.* **1994**, *19*, 252–284. [CrossRef]

32. Donaldson, T.; Dunfee, T. *Ties That Bind: A Social Contract Approach to Business Ethics*; Harvard Business School Press: Cambridge, MA, USA, 1999.
33. Wood, D.J.; Logsdon, J.M. Theorising business citizenship. In *Perspectives on Corporate Citizenship*; Andriof, J., McIntosh, M., Eds.; Greenleaf: Sheffield, UK, 2001; pp. 83–103.
34. Cheong, C.W.; Sinnakkannu, J.; Ramasamy, S. Reactive or proactive? Investor sentiment as a driver of corporate social responsibility. *Res. Int. Bus. Financ.* **2017**, *42*, 572–582. [CrossRef]
35. Alhouti, S.; Johnson, C.M.; Holloway, B.B. Corporate social responsibility authenticity: Investigating its antecedents and outcomes. *J. Bus. Res.* **2016**, *24*, 305–319. [CrossRef]
36. Campbell, J.L. Why would corporations behave in socially responsible ways? an institutional theory of corporate social responsibility. *Acad. Manag. Rev.* **2007**, *32*, 946–967. [CrossRef]
37. Wartick, S.L.; Cochran, P.L. The evolution of the corporate social performance model. *Acad. Manag. Rev.* **1985**, *10*, 758–769. [CrossRef]
38. Wood, D.J. Corporate social performance revisited. *Acad. Manage. Rev.* **1991**, *16*, 691–718. [CrossRef]
39. Buysse, K.; Verbeke, A. Proactive environmental strategies: A stakeholder management perspective. *Strateg. Manag. J.* **2003**, *24*, 453–470. [CrossRef]
40. Donaldson, T.; Preston, L.E. The Stakeholder theory of the corporation-Concepts, evidence, and implications. *Acad. Manag. Rev.* **1995**, *20*, 5–91. [CrossRef]
41. Elkington, J. The triple bottom line. In *The Accountable Corporation*; Epstein, M.J., Hanson, K.O., Eds.; Praeger: Westport, CT, USA, 2006; pp. 97–109.
42. Henriques, I.; Sadorsky, P. The determinants of an environmentally responsive firm: An empirical approach. *J. Environ. Econ. Manag.* **1996**, *30*, 381–395. [CrossRef]
43. Menguc, B.; Auh, S.; Ozanne, L. The interactive effect of internal and external factors on a proactive environmental strategy and its influence on a firm's performance. *J. Bus. Ethics* **2010**, *94*, 279–298. [CrossRef]
44. Cacioppe, R.; Forster, N.; Fox, M. A survey of managers' perceptions of corporate ethics and social responsibility and actions that may affect companies' success. *Eur. J. Bus. Ethics* **2008**, *82*, 681–700. [CrossRef]
45. Kraft, K.L.; Jauch, L.R. The organizational effectiveness menu: A device for stakeholder assessment. *Am. J. Bus.* **1992**, *7*, 18–23. [CrossRef]
46. Axinn, C.N.; Blair, J.E.; Heorhiadi, A.; Thach, S.V. Comparing ethical ideologies across cultures. *J. Bus. Ethics* **2004**, *54*, 103–119. [CrossRef]
47. Davenport, K. Corporate citizenship: A stakeholder approach for defining corporate social performance and identifying measures for assessing it. *Bus. Soc.* **2000**, *39*, 210–219. [CrossRef]
48. Weaver, G.R.; Trevino, L.K.; Cochran, P.L. Integrated and decoupled corporate social performance: Management commitments, external pressures, and corporate ethics practices. *Acad. Manag. Rev.* **1999**, *42*, 539–552. [CrossRef]
49. Saeidi, S.P.; Sofian, S.; Saeidi, P.; Saeidi, S.P.; Saaeidi, S.A. How does corporate social responsibility contribute to firm financial performance? The mediating role of competitive advantage, reputation, and customer satisfaction. *J. Bus. Res.* **2015**, *68*, 341–350. [CrossRef]
50. Porter, M.E.; van der Linde, C. Green and competitive. *Harv. Bus. Rev.* **1995**, *73*, 120–134.
51. Chang, C.H. The influence of corporate environmental ethics on competitive advantage: The mediation role of green innovation. *J. Bus. Ethics* **2011**, *104*, 361–370. [CrossRef]