



Communication

# Why Can Green Social Responsibility Drive Agricultural Technology Manufacturing Company to Do Good Things? A Novel Adoption Model of Environmental Strategy

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**Abstract:** The present research proposes the hierarchical linear modeling model (HLM) that describe how green social responsibility (GSR) predict the environmental strategy (ES) of agricultural technology manufacturing companies by the intermediary effects of the supervisor's green promise (GP) based on symbolic context theory. This study collected data with 150 supervisors from 50 different agricultural technology companies in Taiwan to analyze the HLM. The results suggest that vendors of agricultural technology companies should establish GSR to increase GP, which consequently can increase the companies' adoption of the ES. It is now the first to establish a milestone, propose a novel adoption model—GP and its antecedents through the HLM to predict the adoption of ES. These findings can upgrade the related literature of agriculture and can provide the procedure in implementing ES in agricultural technology companies.

**Keywords:** green social responsibility; green promise; environmental strategy; agricultural technology company



**Citation:** Huang, S.Y.B.; Lee, S.-C.; Lee, Y.-S. Why Can Green Social Responsibility Drive Agricultural Technology Manufacturing Company to Do Good Things? A Novel Adoption Model of Environmental Strategy. *Agronomy* **2021**, *11*, 1673. <https://doi.org/10.3390/agronomy11081673>

Academic Editors: Moritz Von Cossel, Joaquín Castro-Montoya, Yasir Iqbal and Gianni Bellocchi

Received: 6 July 2021

Accepted: 20 August 2021

Published: 23 August 2021

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## 1. Introduction

### 1.1. Background

Contemporary agricultural technology manufacturing companies should adopt a good strategy to optimize agricultural production and environmental strategy to handle environmental issues, which is also confirmed as a significant source of competitive advantage [1–4] because of external stakeholders [5–7]. Also, previous research has pointed out that agricultural production will cost huge resources and bring about pollution [8], which supports the emergency in studying the driving factor of environmental strategy (ES) [9–11]. ES is defined as the extent to which the company integrates environmental concerns into strategic planning, such as changing the production process to prevent pollution [8]. This study poses a novel perspective that using green social responsibility (GSR) predicts ES through an intermediary mechanism of green promise (GP) of supervisors based on symbolic context theory [11]. GSR denotes an environmentally responsible practices policy that focuses on various stakeholders [12]. GP denotes the extent to which an employee's state of mind that is attachment and identity on environmental concerns [13]. Also, previous researcher [14] calls that little study to study corporate social responsibility at the organization level to yield a literature gap, so the present study poses how GSR and GP of supervisors s at cross-level can affect company's ES adoption at the same time by the multi-level growth curve model (HLM) [15] to respond this gap. Indeed, previous researchers of the agricultural field on ES implementation almost focus on technical aspects [16–18], and little study has examined the similar concept of GSR, GP, and ES on a HLM framework.

In sum, the present study uses HLM to explore GP and its antecedents to predict the adoption of ES and uses six-month longitudinal data to address the gaps discussed above.

## 1.2. Literature Reviewing

### 1.2.1. GSR and GP

According to the symbolic context theory [11], the GSR is a crucial symbol to guide the self-concept of supervisors to fit environmentally responsible, suggesting the antecedent role of GSR to GP. Indeed, past studies have suggested when the companies demonstrate responsibility and concern to the environment (GSR), the company's employee would reciprocate the company with GP [19,20]. Also, previous researchers found that socially and environmentally responsible activities can shape employees with similar attributes [21]. Thus:

**Hypothesis 1 (H1).** *GSR positively affects GP.*

### 1.2.2. GP and ES

In the same vein, GP of supervisors is also an important symbol to guide companies to select strategy according to the symbolic context theory [11], because supervisors have the power to allocate resources and manpower to perform companies' business activities, which are significant factors to determine what strategy the companies adopt. Thus:

**Hypothesis 2 (H2).** *GP positively affects ES.*

### 1.2.3. GSR and GP at the Organization Level

Previous studies [22–24] have examined corporate social responsibility and affective commitment at the organization level through the theory of the multilevel method [25], so GSR and GP should also have a similar context. For example, the organization-level GSR and GP are the atmosphere that is overspread within the group and are shared by people within the group [26]. In other words, individual-level GSR affects individual-level systems (e.g., individual-level GP and ES) when organization-level GSR affects organization-level systems (e.g., organization-level GP), which explains unique variations in different levels. Also, according to the theory of social learning [27], we pose that individual-level ES is affected by the organization-level and individual-level GSR and GP at the same time. Thus:

**Hypothesis 3 (H3).** *Organization-level GSR positively affects organization-level GP.*

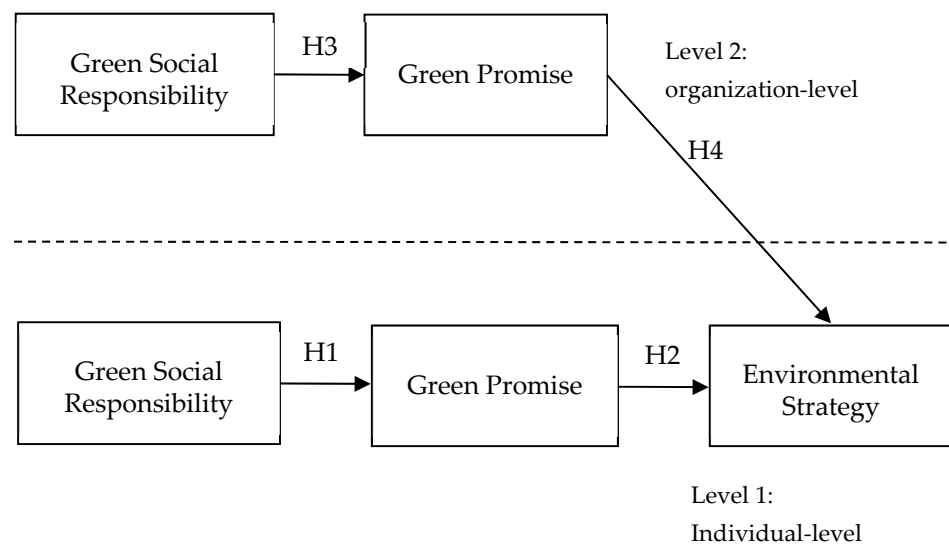
**Hypothesis 4 (H4).** *Organization-level GP positively affects ES adoption.*

## 2. Material and Methods

Based on hypothesis 1 to hypothesis 4, the research model of this research is shown in Figure 1.

### 2.1. Sampling and Procedures

We investigated data at a three-phase time in six months from the agricultural technology manufacturing companies in Taiwan. The interval of each time point was three months to in line with past attitude changes studies [28–30]. We contacted these agricultural technology manufacturing companies to join the survey. These agricultural technology companies mainly use technology to produce upstream products related to agricultural products, such as rice seedlings, breeding chickens, fertilizers, etc. We collected 50 technology manufacturing companies, and each company was requested to recruit 3 supervisors to join this investigation. We used email to collect questionnaires. From the first phase time to the third phase time, we collected 150 supervisors' assessments toward the adoption of ES, GP and GSR.



**Figure 1.** Research model of this research.

## 2.2. Measures

We adopted language conversion method to confirm quality [31], and James et al.'s [32] within-group consensus  $rwg(j)$  was adopted to confirm the variables aggregation. GSR, GP, and ES were assessed through past studies [8,12,33].

## 2.3. Model Validation

The minimum  $rwg(j)$  is 0.81 of GSR, GP, and ES, and it supports aggregating the individual-level GSR and GP into organization level variables. The minimum average variance extracted and the reliability respectively is 0.55 and 0.89. The model fit indexes of the research model are in line with the research of Fornell and Larcker [34].

## 3. Results

### Analysis Results

Because the data framework of this research was nested within each workgroup (105 different companies), so this research employed HLM to analyze the cross-level frameworks [15]. The analysis results are shown in Table 1. First, the individual-level GSR significantly affected the individual-level GP ( $\gamma = 0.32, p < 0.01$ ), and individual-level GP significantly affected the individual-level ES ( $\gamma = 0.35, p < 0.01$ ).

**Table 1.** Results of HLM.

Hypothesis	Path	Coefficient	Results
H <sub>1</sub>	Individual-level Green Social Responsibility → Individual-level Green Promise	0.32 **	Supported
H <sub>2</sub>	Individual-level Green Promise → Individual-level Environmental Strategy	0.35 **	Supported
H <sub>3</sub>	Organization-level Green Social Responsibility → Organization-level Green Promise	0.41 **	Supported
H <sub>4</sub>	Organization-level Green Promise → Individual-level Environmental Strategy	0.37 **	Supported

\*\* =  $p < 0.01$ ; Second, the organization-level GSR significantly influenced organization-level GP ( $\gamma = 0.41, p < 0.01$ ), and organization-level GP significantly influenced the individual-level ES ( $\gamma = 0.37, p < 0.01$ ).

## 4. Discussion

### 4.1. Academic Contribution

This survey is the first to demonstrate the HLM that conceptualizes the ES adoption and its driving factors according to the theory of symbolic context in the agricultural

field. According to the analysis results, individual-level and organization-level GSR would influence individual-level and organization-level GP, which consequently would influence the ES adoption, thereby indicating the validity of the HLM. Also, the HLM perspective is a novel mechanism to open the black box with ES and its antecedent at the multilevel framework that past study has not examined this pathway [9,22]. Therefore, this research has extended GSR, GP, and ES literature into the agricultural field to guide these agricultural technology manufacturing companies to implement sustainable production through the ES.

#### 4.2. Practice Contribution

In the past, research in the field of agriculture has almost adopted new agricultural technologies to implement ES [35,36], but this research proposes another way to implement ES. According to the empirical results, the vendors of agricultural technology manufacturing companies should keep in mind that investing resources in improving employees' attitudes is not the most effective investment and paying attention to the GSR and GP may be a more worthwhile investment. Indeed, GP of supervisors can transform GSR into the company's adoption of ES, and ES is a key source of sustainable production. Therefore, these vendors should learn how to increase GSR and GP by the management mechanism. For example, education training may be one of the effective management mechanisms.

#### 4.3. Further Research and Limitations

The present study includes GSR and GP of supervisors to predict ES adoption, but there may be other key driving factors that could cause the company's ES adoption. Further researchers must explore key driving factors of ES in different contexts. For example, institutional theory has been examined as a key driving factor of ES [8]. Also, further researchers must employ more data in different countries to the proposed model in this research. Finally, a previous study proposed that information technology adoption behavior models can be used as the theoretical basis for strategy adoption of agricultural enterprises [37], and further research should test which models have better explanatory power in different contexts.

### 5. Conclusions

This survey proposes the novel HLM, that is, how GSR can predict the company's ES adoption through the mediation role of the GP in the organizational multi-level framework. This new type of HLM can significantly promote GSR, GP, and ES literature in the field of agriculture management. Indeed, previous studies in the field of agriculture lacked similar studies to the theoretical model of this research because these studies mainly explored how to use innovative agricultural technologies to increase yields. These results can offer references to firms to formulate ES and let these companies know that ES should be implemented by the GP of supervisors to achieve the goal of sustainable development.

**Author Contributions:** Conceptualization, S.Y.B.H.; Data curation, S.-C.L.; Formal analysis, S.-C.L.; Funding acquisition, Y.-S.L.; Methodology, S.-C.L.; Project administration, S.Y.B.H.; Resources, Y.-S.L.; Software, S.-C.L. and Y.-S.L.; Supervision, S.Y.B.H.; Visualization, Y.-S.L.; Writing—original draft, S.Y.B.H.; Writing—review & editing, S.Y.B.H. All authors have read and agreed to the published version of the manuscript.

**Funding:** This research received no external funding.

**Institutional Review Board Statement:** Not applicable.

**Informed Consent Statement:** Not applicable.

**Data Availability Statement:** Not applicable.

**Conflicts of Interest:** The authors declare no conflict of interest.

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