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How Does Sustainable Leadership Promote the Willingness to Adopt an Environmental Innovation Strategy? The Key Mediating Role of Environmental Value

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Abstract: Sustainability has redefined corporate performance-oriented strategies, but research linking organizational leadership to sustainability strategies remains limited. Indeed, most past studies have employed the perspective of institutional pressure to explore why companies passively adopt environmental strategies. However, few studies have explored how to employ the internal management mechanisms of organizations to proactively promote companies to adopt environmental strategies. Therefore, the first purpose of this research is to explore how sustainable leadership promotes strategic adoption through environmental psychological ownership and environmental identity, based on the meaning management theory and upper echelons theory. The second purpose of this study is to address the new concepts of environmental psychological ownership and environmental identity through the social identity theory and psychological ownership theory. To validate the proposed model, this research collected responses from 101 chief executive officers and members of their senior management teams, and the results of the analysis supported all hypotheses. This research can not only provide academic literature with a cross-broad perspective on organizational leadership and sustainability but also provide an example for companies looking to implement sustainability strategies.

Keywords: environmental identity; environmental innovation strategy; environmental psychological ownership; sustainable development; sustainable leadership



Citation: Hu, L.; Li, H.-X.; Lee, S.-C.; Lee, Y.-S.; Yen, S.-J. How Does Sustainable Leadership Promote the Willingness to Adopt an Environmental Innovation Strategy? The Key Mediating Role of Environmental Value. *Sustainability* **2024**, *16*, 2988. <https://doi.org/10.3390/su16072988>

Academic Editor: Sooksan Kantabutra

Received: 23 December 2023

Revised: 24 March 2024

Accepted: 27 March 2024

Published: 3 April 2024



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1. Introduction

As global environmental changes, greenhouse effects, and political conflicts become increasingly serious [1,2], the United Nations has proposed 17 Sustainable Development Goals (SDGs) to address these issues. These goals involve eradicating global poverty, encouraging social trust, and protecting the environment [3,4]. In addition, pressure from governments and non-governmental organizations has prompted industries to integrate environmental and social aspects into their development strategies, which is an important driver of SDGs.

The main purposes of this research are the following four points. First, sustainability realigns research and development activities about corporate economics, since performance-oriented leadership mechanisms are no longer feasible for internal management. This reorientation toward sustainability extends the concept of “sustainable leadership”. Sustainable leadership emphasizes improving the lives of all stakeholders and generating current and future profits for the organization. It also promotes the core value of sustainability at the individual, organizational, and social levels. In addition, sustainable leaders focus on sustainable change and long-term results, which allows them to look beyond

immediate short-term interests and focus on the larger sustainability vision in the pursuit of sustainability goals [5]. However, sustainable leadership is still in its infancy, and there is an urgent need to expand its application in different fields [6].

Secondly, for sustainable development, business organizations consider the natural environment as an integral part of their corporate strategies, as the effective integration of ecology, social performance, and the environment provides a strong competitive advantage that sets them apart from many business competitors. To compete effectively, contemporary technology manufacturing companies must not only develop effective strategies to improve production performance but also address environmental issues at the same time. Therefore, many companies have begun to emphasize environmental management and implement environmental innovation strategies [7]. Indeed, environmental innovation strategies are an important source of sustainable production [8] and can also respond to external stakeholder pressures from governments, media, and consumers.

Third, since the manufacturing processes of technological products cause a large amount of environmental pollution and resource consumption, environmental strategies are very important for the technological industry to alleviate environmental pollution. However, there are still many black boxes on how to enable companies to implement environmental innovation strategies [9,10]. Therefore, this research draws on upper echelon theory [11] and meaning management theory [12] to open this black box. Meaning management theory [12] believes that organizational values can be transmitted through the leadership process, and the leadership process can also change followers' values to meet organizational expectations. Upper echelons theory [11] believes that a supervisor's characteristics (such as age) or personal values (such as attitude toward the environment) can affect the company's strategy adoption. Indeed, a chief executive officer's adoption of sustainable leadership should change the attitude of a company's senior management team towards the environment. In particular, a company's top management team controls most of the company's resources invested in strategic activities [2], so the environmental attitudes of these top management teams should influence the company's adoption of environmental innovation strategies.

Fourth, this research hopes to develop the environmental psychological ownership and environmental identity theories based on the psychological ownership theory [13] and social identity theory [14]. The reason why this research develops the concepts of environmental psychological ownership and environmental identity is that few articles adopt environmental psychological ownership and environmental identity to predict the adoption of corporate environmental innovation strategies. In particular, psychological ownership theory and social identity theory are both important psychological theories for behavioral adoption [15,16], so this research adopts these theories for sustainable development, which makes important incremental contributions.

The primary significance of this research is to provide a new perspective on sustainable development from the perspective of behavioral science, because most of the past research on sustainable development focused on climate change [17], institutional theory [18], and economic development [19]. This research explores how to enable enterprises to proactively adopt environmental innovation strategies to achieve the goal of environmental sustainability from the perspective of organizational leadership mechanisms. The second important purpose of this research is to provide a paradigm shift in the field of environmental management. There has been a lot of research on leadership styles, psychological ownership theory, social identity, and innovation strategies, but whether these concepts can be transferred to the environmental management field is still unknown. Therefore, this research attempts to incorporate these concepts into the connotation of environmental management and provide an example of how these paradigms can be transferred to environmental management.

The research question raised in this research is as follows:

Research question: Can an environmental innovation strategy be influenced by sustainable leadership, environmental psychological ownership, and environmental identity?

2. Literature Review

2.1. Sustainable Leadership

Researchers have developed organizational leadership into various leadership types such as transformational leadership, entrepreneurial leadership, responsible leadership, ethical leadership, and authentic leadership over the past six decades, and they have found that leadership not only shapes leaders but also the behavior of leaders, employees, and organizations [20]. Although research on organizational leadership has yielded significant results, the leadership literature still needs to explore the effectiveness of different types of leadership. That said, “effective leadership” in the past was defined and measured based on the impact of leadership types on internal organizations, such as ethical leadership [21], responsible leadership [21], accountable leadership [22], entrepreneurial leadership [23], and safety leadership [24]. The subsequent study proposed sustainable leadership through extending leadership into the sustainable development field [5]. This “goal-oriented” leadership repositioning is mainly driven by climate change, resource scarcity, environmental damage, etc. Therefore, leaders must pay attention to both the internal organization and the environment [25], which forms the concept of “sustainable leadership” [26]. Almost all investigations on sustainable leadership have added different mediating variables to predict sustainable performance [5,27]. However, a limited amount of research has integrated environmental innovation strategies and sustainability leadership, let alone considered the intermediary role of environment psychological ownership and environmental identity among top management teams. Therefore, this research explores the impact of sustainable leadership on environmental innovation strategies to fill the past research gap.

Over the past sixty years, researchers have developed organizational leadership into transformational leadership, entrepreneurial leadership, responsible leadership, ethical leadership, authentic leadership, and other leadership types, and found that leadership not only shapes leadership, it also shapes the behavior of leaders, employees, and organizations [20]. Although research on organizational leadership has achieved significant results, the leadership literature still needs to explore the effectiveness of different types of leadership. That is to say, “effective leadership” in the past was defined and measured based on the impact of leadership types on internal organizations, such as ethical leadership [21], responsible leadership [21], accountable leadership [22], entrepreneurial leadership [23], and safety leadership [24]. Subsequent research proposed sustainable leadership by extending leadership to the field of sustainable development [5]. This repositioning of “purpose-oriented” leadership is mainly driven by climate change, resource scarcity, environmental damage, etc. Therefore, leaders must pay attention to both the internal organization and the environment [25], which forms the concept of “sustainable leadership” [26].

The earliest sustainable leadership was first proposed by the research of Hargreaves and Fink [27]. They believed that leadership should combine the concepts of sustainability and sustainable management to meet the needs of society and allow enterprises to continue to develop. In fact, sustainable leadership originated from Germany’s “Rhineland Management” [28], which means that Rhineland Management advocates that leadership should focus on corporate social responsibility, ethical behavior, and fairness [28]. Avery and Bergsteiner [29] also continued the research of Avey [28] and proposed that the purpose of sustainable leadership is to promote corporate innovation, increase customer value, and cultivate highly dedicated employees to assist companies in implementing sustainable development decisions. In short, the purpose of sustainable leadership is to shape a sustainable organizational culture to guide employees to improve sustainable performance and job satisfaction to achieve the goal of sustainable development.

However, almost all past investigations on sustainable leadership have included different mediating variables to predict sustainable performance [5,30]. However, few studies have integrated environmental innovation strategies with sustainability leadership, let alone considered the mediating role of psychological environmental ownership and environmental identification in top management teams. Therefore, this study explores the

impact of sustainable leadership on environmental innovation strategies to fill the past research gap.

2.2. Environmental Psychological Ownership Theory

Psychological ownership refers to the relationship between an individual and his or her closely related objects that are perceived to be associated with oneself [13]. The source of individual psychological ownership is mainly that the ownership of specific items can enable humans to satisfy the needs of belonging, self-efficacy, and identity [13]. For example, humans naturally want to feel a sense of belonging, gain control over external things, or gain recognition by owning an object that signals their status. Past research has empirically investigated psychological ownership theory in business organizations to predict positive employee behaviors [31] or consumer behaviors [32], but few studies have been applied to the field of sustainable environments. Therefore, this research explores why environmental psychological ownership plays a key mediating role between sustainability leadership and environmental innovation strategies to fill past research gaps.

2.3. Environmental Identity

Social identity theory is a psychological construct proposed by Tajfel and Turner in the 1970s [33]. It attempts to explain how individuals develop a sense of identity and belonging within a social group. According to this theory, people strive to maintain a positive self-concept by identifying with certain social groups and comparing themselves to others. Social identity theory believes that individuals have both personal and social identities, which can include nationality, race, religion, gender, occupation, and other categories [14]. When individuals identify with a particular group, they tend to adopt the norms, values, and behaviors of that group. The theory holds that people derive self-esteem from their social identity and seek to enhance the status and uniqueness of their group. It can lead to in-group favoritism, where individuals show preference for members of their group and may even discriminate against members of other groups. Overall, social identity theory provides insights into how group membership and identification shape individuals' self-concepts, attitudes, and behaviors, and how these processes contribute to social dynamics and intergroup relationships.

The environmental identity proposed in this research refers to the sense of belonging and identification with environmental values, sustainability, and ecological awareness. It encompasses a set of beliefs, attitudes, and behaviors that prioritize protecting and preserving the natural world. People with an environmental identity often prioritize environmental issues such as climate change, biodiversity conservation, renewable energy, and sustainable practices in daily life. They can actively participate in activities such as recycling, reducing waste, and advocating for environmental policies. Environmental identity can be viewed as an individual and collective commitment to living in harmony with nature and promoting a more sustainable future. However, research on why environmental identity mediates the relationship between sustainable leadership and environmental innovation strategies is still limited, so this research includes this concept to fill past research gaps.

2.4. Sustainable Leadership and Environmental Innovation Strategy

Having an environmental innovation strategy means that enterprises will adopt environmentally innovative product strategies related to environmental management when they produce products [34]. When corporate executives adopt sustainable leadership, it will affect the company's understanding and priority of deploying environmental strategies. The reason is that sustainable leadership encourages the cultivation of sustainable innovative ideas to improve sustainable environmental performance, resulting in companies preferring to adopt an environmental strategy. Based on the claims of upper echelons theory [11], the characteristics of chief executive officers will significantly affect the strategic choices of companies. Past research proposes that leadership is regarded as an important characteristic of leaders [2], so sustainable leadership will influence environmental inno-

vation strategies. In addition, the chief executive officer controls most of a company's manpower and resources, so the chief executive officer's preference for sustainable development will affect which corporate activities are invested in [35–37], which in turn affects the company's willingness to adopt environmental strategies. Indeed, past studies have found a similar result and propose that sustainable leadership can lead to innovative employee behavior [38].

This research puts forward a first hypothesis:

Hypothesis 1. *Sustainable leadership will affect a company's willingness to adopt an environmental innovation strategy in the future.*

2.5. The Relationship between Sustainable Leadership, Environmental Psychological Ownership, and Environmental Identity

Based on the meaning management theory [12], an organization's environmental values can be transmitted to subordinates through the sustainable leadership process, and the sustainable leadership process can change subordinates' values to meet the expectations of the organization's environmental values [39–41], thus clarifying the relationship between environmental identity, psychological environmental ownership, and sustainable leadership. When chief executive officers use sustainable leadership to guide their senior management team, their organization's environmental sustainability values are also transmitted to the senior management team. Therefore, in the process of sustainable leadership, the original values of the senior management team will shift to environmental values. This research proposes that environmental psychological ownership and environmental identity are two important environmental values of senior management teams. This research puts forward Hypothesis 2 and 3:

Hypothesis 2. *The level of sustainable leadership will affect the environmental psychological ownership of a senior management team in the future.*

Hypothesis 3. *The level of sustainable leadership will affect the environmental identity of a senior management team in the future.*

2.6. The Relationship between Environmental Psychological Ownership, Environmental Identity, and Environmental Innovation Strategy

In addition, senior management teams possess the legitimacy to hire people within their company and allocate resources to different activities [42], which will inevitably affect the company's adoption of strategic preferences. In particular, senior management teams with a high sense of environmental psychological ownership and environmental identity can put aside personal interests and choose environmental innovation strategies to solve sustainable environmental problems. In contrast, senior management teams with low levels of environmental psychological ownership and environmental identity may have less unanimity within the group on reducing environmental impacts and are more likely to use resources for short-term benefit development strategies [43]. Senior management teams may be eager to align their actions with their self-concepts of environmental values, and past studies also support this perspective [44–46]. This research proposes a fourth and fifth hypothesis:

Hypothesis 4. *Environmental psychological ownership will positively influence the adoption of an environmental innovation strategy in the future.*

Hypothesis 5. *Environmental identity will positively influence the adoption of an environmental innovation strategy in the future.*

3. Materials and Methods

The five hypotheses, as mentioned above, are listed in Figure 1.

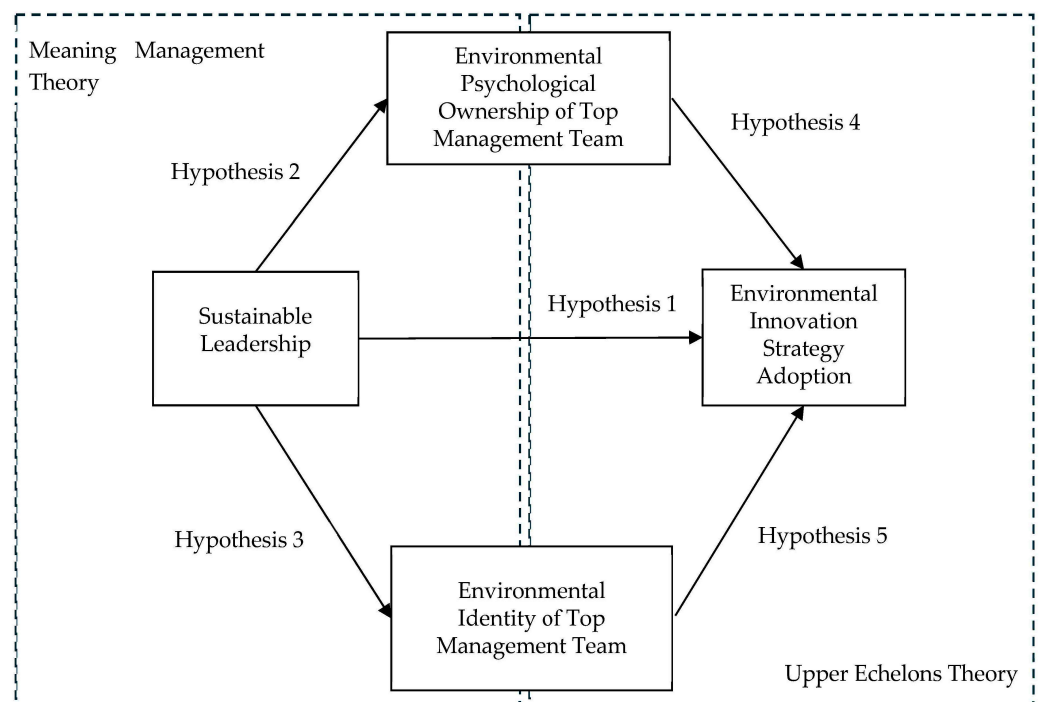


Figure 1. Research Model.

3.1. Quantitative Research Method

3.1.1. Measurements

This research adopted McCann and Holt's [47] scale to evaluate sustainable leadership. An example item of sustainable leadership is "My chief executive officer acts in a sustainable environmentally responsible manner". This research referred to Peck and Shu's [48] scale to develop an environmental psychological ownership scale. An example of environmental psychological ownership is "I feel the natural environment is my own". This research referred to Chen's [49] scale to develop an environmental identity scale. An example of environmental identity is "I identify with environmental management and protection". Finally, environmental innovation strategies were evaluated by Soewarno et al. [7]. An example of an environmental innovation strategy is "My company designs products that are easy to recycle, reuse, and decompose".

3.1.2. Sampling Procedure

This research obtained responses from 101 chief executive officers and their senior management teams in technology firms and both groups agreed to take part in this survey. This research contacted the top management team members individually to complete the questionnaire.

These chief executive officers were asked to fill in questions about the environmental psychological ownership and environmental identity of their senior management teams and their intentions of adopting an environmental innovation strategy. These senior management teams were asked to fill in questions about their chief executive officer's sustainable leadership.

This research adopted this sampling framework because past investigations have adopted a similar interval [50–52] to propose that attitudes should have a visible change in three months. In addition, sampling data from multiple sources can ease the issues of common method variance [53].

4. Results

4.1. Reliability and Validity

To validate the reliability and validity of sustainable leadership, environmental psychological ownership, environmental identity, and the intentions of adopting an environmental innovation strategy, this research borrowed from the analysis of confirmatory factors to analyze the composition reliability and average variance extracted. In addition, Cronbach's alpha, root mean square error of approximation (RMSEA), root mean residual (RMR), comparative fit index (CFI), goodness of fit index (GFI), and normed-fit index (NFI) were also analyzed and are presented in Table 1.

Table 1. The confirmatory factor technique.

Constructs	Items	λ	Cronbach's α	Composite Reliability	Average Variation Extracted
Sustainable Leadership (SL)	SL01	0.861 **	0.934	0.94	0.64
	SL02	0.882 **			
	SL03	0.845 **			
	SL04	0.721 **			
	SL05	0.779 **			
	SL06	0.812 **			
	SL07	0.832 **			
	SL08	0.756 **			
	SL09	0.724 **			
	SL10	0.861 **			
	SL11	0.741 **			
Environmental Psychological Ownership (EPO)	EPO01	0.893 **	0.87	0.84	0.65
	EPO02	0.806 **			
	EPO03	0.719 **			
Environmental Identity (EI)	EI01	0.836 **	0.90	0.91	0.64
	EI02	0.875 **			
	EI03	0.712 **			
	EI04	0.774 **			
	EI05	0.781 **			
	EI06	0.830 **			
Environmental Innovation Strategy (EIS)	EIS01	0.764 **	0.91	0.90	0.60
	EIS 02	0.734 **			
	EIS 03	0.752 **			
	EIS 04	0.774 **			
	EIS 05	0.818 **			
	EIS 06	0.816 **			

Notes: (1) **: $p < 0.01$; (2) RMR = 0.046; RMSEA = 0.040; GFI = 0.90; CFI = 0.91; NFI = 0.90.

Based on Table 1, the λ of each item is greater than 0.5, which is as suggested by Hair et al. [54]. Each Cronbach's α is greater than 0.7, as suggested by Fornell and Larcker [55]. Each composition reliability is greater than 0.6, as suggested by Hair et al. [54], when each average variance extracted is greater than 0.5, as suggested by Fornell and Larcker [55]. These analysis results indicate good reliability and convergent validity.

This research also employed the Kolmogorov–Smirnov test to confirm the normality of the data, and the p -value is 0.078, which indicates the normality of the data in this research. Finally, to confirm if the measurement errors for all constructs were independent, this research linked all measurement errors to a single construct, and the chi-square value of the new measurement framework is greater than the chi-square value of the original measurement model ($X_2 - X_1 = 105$), supporting the independence for all measurement errors.

4.2. Path Analysis

This research's results are shown in Table 2. Sustainable leadership significantly increases environmental innovation strategy (coefficient = 0.26, p value < 0.01), so Hypothesis 1 is validated. Hypothesis 1 proposes that a chief executive officer showing more sustainable leadership will increase the adoption of an environmental innovation strategy. In addition, sustainable leadership significantly increases environmental psychological ownership (coef-

ficient = 0.31, p value < 0.01) and environmental identity (coefficient = 0.27, p value < 0.01), so Hypothesis 2 and Hypothesis 3 are both validated. Hypothesis 2 and Hypothesis 3 propose that top management teams who perceive more sustainable leadership from their chief executive officers will show more environmental psychological ownership and environmental identity. Finally, environmental psychological ownership (coefficient = 0.32, p value < 0.01) and environmental identity (coefficient = 0.29, p value < 0.01) significantly increase the adoption of an environmental innovation strategy, so Hypothesis 4 and Hypothesis 5 are both validated. Hypothesis 4 and Hypothesis 5 propose that top management teams who have more environmental psychological ownership and environmental identity will increase their intentions of adopting an environmental innovation strategy.

Table 2. Path analysis results.

Hypothesis	Relationship Path	Coefficient
Hypothesis 1	Sustainable Leadership -> Environmental Innovation Strategy	0.26 **
Hypothesis 2	Sustainable Leadership -> Environmental Psychological Ownership	0.31 **
Hypothesis 3	Sustainable Leadership -> Environmental Identity	0.09 **
Hypothesis 4	Environmental Psychological Ownership -> Environmental Innovation Strategy	0.32 **
Hypothesis 5	Environmental Identity -> Environmental Innovation Strategy	0.29 **

Note: ** = p < 0.01.

5. Discussion

5.1. Academic Contribution

This research opens the black box mechanism of environmental innovation strategy, and the importance of this research is different from the traditional passive viewpoint. For the study of environmental strategy forecasting, this research proposes a research model (Figure 1) to explain the active adoption of an environmental strategy by sustainable leadership to achieve the goals of sustainable management. In addition, this research is the first to explain how a top management team's environmental psychological ownership and environmental identity can be effectively linked with their chief executive officer's sustainable leadership to promote their company's adoption of an environmental innovation strategy. Few studies explore the perspective of an organization's leadership mechanism and use the upper echelons theory and meaning management theory to explain why the top management team plays a key role within this mechanism. This mechanism can provide a reference for a technology manufacturing company to implement an environmental innovation strategy.

Past research on psychological ownership and social identity has crossed over to organizational behaviors, consumer behaviors, and educational psychologies, but few studies have extended them to the field of sustainable management. In particular, this research incorporates them into the environmental attitude of a top management team. This paradigm shift can not only guide future research on social identity and psychological ownership in the field of environmental management but also create a new research stream. Indeed, leadership, psychological ownership, and social identity are all common variables that have been examined in many studies, but there are limited studies that refine these variables into sustainable development. Therefore, this research makes a significant incremental contribution to the field.

This research opens up the black box mechanism of environmental innovation strategy. This research is different from the traditional passive perspective on environmental strategy prediction, but instead proposes that the organizational leadership mechanism can proactively promote a company to adopt an environmental innovation strategy to achieve the goal of sustainable management. In addition, this research explains how a

senior management team's environmental psychological ownership and environmental identity are effectively linked to their chief executive officer's sustainable leadership in promoting their company's adoption of an environmental innovation strategy. Few studies have used the perspective of organizational leadership mechanisms to explain why senior management teams play a key role. This mechanism can provide a reference for technology manufacturing companies to implement environmental innovation strategies.

5.2. Practice Contribution

Environmental innovation strategies are very important for the sustainable development of enterprises, so enterprises need to think about how to promote the adoption of an environmental innovation strategy through the organizational management mechanism. According to the research model of this research, sustainable leadership is the main driving force for technological manufacturing companies to adopt an environmental innovation strategy. Therefore, human resource managers should invest appropriate resources in sustainable leadership education and training. In addition, senior executives should also cultivate an environmentally sustainable organizational climate or culture within the company, as it can effectively increase the company's willingness to adopt the environmental innovation strategy.

5.3. Future Research and Limitations

First, since the research model of this research contains mediating variables, subsequent research should use different situational samples to verify the effects of these mediating variables or use different statistical analysis methods. Second, since this research is an empirical article rather than a statistical method article, subsequent research should conduct more in-depth optimization of the statistical algorithm to obtain more accurate analysis results. Third, subsequent research should also analyze what sampling intervals and sampling times can be used to analyze the data more accurately to obtain more stable statistical results. Finally, although this research proposes a psychological model for predicting the environmental innovation strategy from a theoretical perspective, the empirical sample from specific industries in Taiwan has certain limitations. As such, the applicability of the claims of the psychological model in this research is limited. It is recommended that subsequent research should use different samples to verify the theoretical model of this research.

6. Conclusions

This research proposes a novel model to explain how to implement an environmental strategy by the leadership mechanism and the environmental values of senior management teams, creating a new research milestone in the sustainability management of technology manufacturing enterprises. This research verified the research model among 101 chief executive officers of technology manufacturing companies and their senior management team members at three time points within six months (Figure 1). Statistical analysis results show that sustainable leadership can enhance the adoption of an environmental innovation strategy through the mediating role of environmental psychological ownership and environmental identity. This result also fills a gap in the past research on environmental innovation strategy. In other words, the technology manufacturing industry can implement an environmental innovation strategy by the leadership mechanism and the green values of the senior management team to achieve the goal of sustainable development. Finally, this research not only promotes the literature on sustainable development through the organizational management mechanism but also provides an example for technology manufacturing companies to implement environmental innovation strategies to achieve green competitive advantages.

Author Contributions: Conceptualization, L.H.; Methodology, S.-C.L.; Software, S.-C.L.; Validation, S.-C.L.; Investigation, S.-J.Y.; Resources, S.-J.Y.; Data curation, Y.-S.L.; Writing—original draft, L.H.; Writing—review & editing, H.-X.L.; Visualization, S.-C.L.; Supervision, H.-X.L.; Project administration, H.-X.L.; Funding acquisition, Y.-S.L. 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: Informed consent was obtained from all subjects involved in the study.

Data Availability Statement: Data sharing is not applicable to this article.

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

References

1. Caffaro, F.; Roccato, M.; Micheletti Cremasco, M.; Cavallo, E. An ergonomic approach to sustainable development: The role of information environment and social-psychological variables in the adoption of agri-environmental innovations. *Sustain. Dev.* **2019**, *27*, 1049–1062. [\[CrossRef\]](#)
2. Liu, D.; Fisher, G.; Chen, G.L. CEO attributes and firm performance: A sequential mediation process model. *Acad. Manag. Ann.* **2018**, *12*, 789–816. [\[CrossRef\]](#)
3. Elalfy, A.; Weber, O.; Geobey, S. The Sustainable Development Goals (SDGs): A rising tide lifts all boats? Global reporting implications in a post SDGs world. *J. Appl. Account. Res.* **2021**, *22*, 557–575. [\[CrossRef\]](#)
4. Sachs, J.D. *The Age of Sustainable Development*; Columbia University Press: New York, NY, USA, 2015.
5. Iqbal, Q.; Ahmad, N.H.; Li, Z.; Li, Y. To walk in beauty: Sustainable leadership, frugal innovation and environmental performance. *Manag. Decis. Econ.* **2022**, *43*, 738–750. [\[CrossRef\]](#)
6. Burawat, P. The relationships among transformational leadership, sustainable leadership, lean manufacturing and sustainability performance in Thai SMEs manufacturing industry. *Int. J. Qual. Reliab. Manag.* **2019**, *36*, 1014–1036. [\[CrossRef\]](#)
7. Soewarno, N.; Tjahjadi, B.; Fithrianti, F. Green innovation strategy and green innovation: The roles of green organizational identity and environmental organizational legitimacy. *Manag. Decis.* **2019**, *57*, 3061–3078. [\[CrossRef\]](#)
8. Majerník, M.; Daneshjo, N.; Malega, P.; Rudy, V.; Al-Rabeei, S.A.S. Environmental Innovation and Green Growth in the Repair and Maintenance of Cars—Case Study. *Sustainability* **2021**, *13*, 12853. [\[CrossRef\]](#)
9. Dai, J.; Chan, H.K.; Yee, R.W.Y. Examining moderating effect of organizational culture on the relationship between market pressure and corporate environmental strategy. *Ind. Mark. Manag.* **2018**, *74*, 227–236. [\[CrossRef\]](#)
10. Wang, C.H.; Juo, W.-J. An environmental policy of green intellectual capital: Green innovation strategy for performance sustainability. *Bus. Strategy Environ.* **2021**, *30*, 3241–3254. [\[CrossRef\]](#)
11. Hambrick, D.C. Upper echelons theory: An update. *Acad. Manag. Rev.* **2007**, *32*, 334–343. [\[CrossRef\]](#)
12. Oral, M. Meaning management: A framework for leadership ontology. *J. Values-Based Leadersh.* **2019**, *12*, 11. [\[CrossRef\]](#)
13. Pierce, J.L.; Kostova, T.; Dirks, K.T. The state of psychological ownership: Integrating and extending a century of research. *Rev. Gen. Psychol.* **2003**, *7*, 84–107. [\[CrossRef\]](#)
14. Hogg, M.A. *Social Identity Theory*; Springer International Publishing: Cham, Switzerland, 2016; pp. 3–17.
15. Carvalho, S. *Understanding Consumption as Expression of Consumer's National Identity*; City University of New York: New York, NY, USA, 2005.
16. Peck, J.; Shu, S.B. (Eds.) *Psychological Ownership and Consumer Behavior*; Springer: New York, NY, USA, 2018.
17. Ahmed, N.; Thompson, S.; Glaser, M. Global Aquaculture Productivity, Environmental Sustainability, and Climate Change Adaptability. *Environ. Manag.* **2019**, *63*, 159–172. [\[CrossRef\]](#) [\[PubMed\]](#)
18. Peng, B.H.; Tu, Y.; Elahi, E.; Wei, G. Extended producer responsibility and corporate performance: Effects of environmental regulation and environmental strategy. *J. Environ. Manag.* **2018**, *218*, 181–189. [\[CrossRef\]](#) [\[PubMed\]](#)
19. Ibrahim, M.D.; Alola, A.A. Integrated analysis of energy-economic development-environmental sustainability nexus: Case study of MENA countries. *Sci. Total Environ.* **2020**, *737*, 139768. [\[CrossRef\]](#) [\[PubMed\]](#)
20. Yukl, G. Effective leadership behavior: What we know and what questions need more attention. *Acad. Manag. Perspect.* **2012**, *26*, 66–85. [\[CrossRef\]](#)
21. Wu, Q.; Cherian, J.; Samad, S.; Comite, U.; Hu, H.; Gunnlaugsson, S.B.; Oláh, J.; Sial, M.S. The Role of CSR and Ethical Leadership to Shape Employees' Pro-Environmental Behavior in the Era of Industry 4.0. A Case of the Banking Sector. *Sustainability* **2021**, *13*, 9773. [\[CrossRef\]](#)
22. Elmore, R.F. Accountable leadership. In *The Educational Forum*; Taylor & Francis Group: Boca Raton, FL, USA, 2005; Volume 69, pp. 134–142.
23. Nor-Aishah, H.; Ahmad, N.H.; Thuramy, R. Entrepreneurial Leadership and Sustainable Performance of Manufacturing SMEs in Malaysia: The Contingent Role of Entrepreneurial Bricolage. *Sustainability* **2020**, *12*, 3100. [\[CrossRef\]](#)

24. Bazzoli, A.; Curcuruto, M.; Morgan, J.I.; Brondino, M.; Pasini, M. Speaking Up about Workplace Safety: An Experimental Study on Safety Leadership. *Sustainability* **2020**, *12*, 7458. [\[CrossRef\]](#)
25. Boiral, O.; Baron, C.; Gunnlaugson, O. Environmental leadership and consciousness development: A case study among Canadian SMEs. *J. Bus. Ethics* **2014**, *123*, 363–383. [\[CrossRef\]](#)
26. Hallinger, P.; Suriyankietkaew, S. Science Mapping of the Knowledge Base on Sustainable Leadership, 1990–2018. *Sustainability* **2018**, *10*, 4846. [\[CrossRef\]](#)
27. Hargreaves, A.; Goodson, I. Educational change over time? The sustainability and nonsustainability of three decades of secondary school change and continuity. *Educ. Adm. Q.* **2006**, *42*, 3–41. [\[CrossRef\]](#)
28. Avery, G. *Leadership for Sustainable Futures: Achieving Success in a Competitive World*; Edward Elgar Publishing: Cheltenham, UK, 2005.
29. Avery, G.C.; Bergsteiner, H. Sustainable leadership practices for enhancing business resilience and performance. *Strateg. Leadersh.* **2011**, *39*, 5–15. [\[CrossRef\]](#)
30. Sulasmi, E.; Tanjung, H. Bridging the way towards sustainability performance through safety, empowerment and learning: Using sustainable leadership as driving force. *J. Secur. Sustain. Issues* **2020**, *10*, 93–107. [\[CrossRef\]](#) [\[PubMed\]](#)
31. Degbey, W.Y.; Rodgers, P.; Kromah, M.D.; Weber, Y. The impact of psychological ownership on employee retention in mergers and acquisitions. *Hum. Resour. Manag. Rev.* **2021**, *31*, 100745. [\[CrossRef\]](#)
32. Morewedge, C.K.; Monga, A.; Palmatier, A.; Shu, S.B.; Small, D.A. Evolution of consumption: A psychological ownership framework. *J. Mark.* **2021**, *85*, 196–218. [\[CrossRef\]](#)
33. Tajfel, H. (Ed.) Social categorization, social identity and social comparison. In *Differentiation between Social Groups: Studies in the Social Psychology of Intergroup Relations*; Academic Press: London, UK, 1978; pp. 61–76.
34. Wijethilake, C.; Munir, R.; Appuhami, R. Environmental innovation strategy and organizational performance: Enabling and controlling uses of management control systems. *J. Bus. Ethics* **2018**, *151*, 1139–1160. [\[CrossRef\]](#)
35. Huang, S.Y.; Chen, K.H.; Lee, Y.S. How to Promote Medium-Sized Farms to Adopt Environmental Strategy to Achieve Sustainable Production during the COVID-19 Pandemic? *Agriculture* **2021**, *11*, 1052. [\[CrossRef\]](#)
36. Huang, S.Y.B.; Li, M.-W.; Lee, Y.-S. Why Do Medium-Sized Technology Farms Adopt Environmental Innovation? The Mediating Role of Pro-Environmental Behaviors. *Horticulturae* **2021**, *7*, 318. [\[CrossRef\]](#)
37. Huang, S.Y.; Yu, C.C.; Lee, Y.S. How to promote the agricultural company through environmental social responsibility to achieve sustainable production? *Front. Environ. Sci.* **2022**, *9*, 521. [\[CrossRef\]](#)
38. Javed, A.; Iqbal, J.; Iqbal, S.M.J.; Imran, M. Sustainable leadership and employee innovative behavior: Discussing the mediating role of creative self-efficacy. *J. Public Aff.* **2021**, *21*, e2547. [\[CrossRef\]](#)
39. Huang, S.Y.; Huang, C.H.; Chang, T.W. A new concept of work engagement theory in cognitive engagement, emotional engagement, and physical engagement. *Front. Psychol.* **2022**, *12*, 663440. [\[CrossRef\]](#) [\[PubMed\]](#)
40. Huang, S.Y. How to drive the innovation strategy adoption in the renewable energy technology company: A perspective of organizational management. *Environ. Dev. Sustain.* **2023**, 1–17. [\[CrossRef\]](#)
41. Lee, C.J.; Huang, S.Y. Double-edged effects of ethical leadership in the development of Greater China salespeople's emotional exhaustion and long-term customer relationships. *Chin. Manag. Stud.* **2020**, *14*, 29–49. [\[CrossRef\]](#)
42. Chen, Y.; Tang, G.; Cooke, F.L.; Jin, J. How does executive strategic resource management link to organizational ambidexterity? an empirical examination of manufacturing firms in China. *Hum. Resour. Manag.* **2016**, *55*, 919–943. [\[CrossRef\]](#)
43. Liu, Z.; Li, J.; Zhu, H.; Cai, Z.; Wang, L. Chinese firms' sustainable development-the role of future orientation, environmental commitment, and employee training. *Asia Pac. J. Manag.* **2014**, *31*, 195–213. [\[CrossRef\]](#)
44. Huang, S.Y.; 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. [\[CrossRef\]](#)
45. Huang, S.Y.; Lee, S.C.; Lee, Y.S. Constructing an adoption model of proactive environmental strategy: A novel quantitative method of the multi-level growth curve model. *Mathematics* **2021**, *9*, 1962. [\[CrossRef\]](#)
46. Lee, S.C.; Huang, S.Y. The effect of Chinese-specific environmentally responsible leadership on the adoption of green innovation strategy. *Energy Environ.* **2023**, 0958305X231177731. [\[CrossRef\]](#)
47. McCann, J.T.; Holt, R.A. Servant and sustainable leadership: An analysis in the manufacturing environment. *Int. J. Manag. Pract.* **2010**, *4*, 134–148. [\[CrossRef\]](#)
48. Peck, J.; Shu, S.B. The effect of mere touch on perceived ownership. *J. Consum. Res.* **2009**, *36*, 434–447. [\[CrossRef\]](#)
49. Chen, Y.S. Green organizational identity: Sources and consequence. *Manag. Decis.* **2011**, *49*, 384–404. [\[CrossRef\]](#)
50. Huang, S.Y.B.; Lee, C.-J. Predicting continuance intention to fintech chatbot. *Comput. Hum. Behav.* **2022**, *129*, 107027. [\[CrossRef\]](#)
51. Huang, S.Y. How can corporate social responsibility predict voluntary pro-environmental behaviors? *Energy Environ.* **2023**, 0958305X231167473. [\[CrossRef\]](#)
52. Lee, C.J.; Huang, S.Y. Can ethical leadership hinder sales performance? A limited resource perspective of job embeddedness. *Chin. Manag. Stud.* **2019**, *13*, 985–1002. [\[CrossRef\]](#)
53. Podsakoff, P.M.; MacKenzie, S.B.; Lee, J.-Y.; Podsakoff, N.P. Common method biases in behavioral research: A critical review of the literature and recommended remedies. *J. Appl. Psychol.* **2003**, *88*, 879–903. [\[CrossRef\]](#) [\[PubMed\]](#)

54. Hair, J.E.; Anderson, R.E.; Tatham, R.L.; Black, W.C. *Multivariate Data Analysis*; Prentice-Hall: Upper Saddle River, NJ, USA, 1998.
55. Fornell, C.R.; Larcker, F.F. Structural Equation Models with Unobservable Variables and Measurement Error. *J. Mark. Res.* **1981**, *18*, 39–51. [[CrossRef](#)]

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