International Journal of Environmental Sciences
ISSN: 2229-7359
Vol. 11 No. 20s, 2025
https://theaspd.com/index.php

Mediating Role Of Environmental Capacity In The Relationship Between Green-Oriented International Trade Policy And Sustainable Trade Performance Of Exporting Enterprises In Vietnam

Cong Thanh Le[1], Thi Phuong Huyen Le[2], Minh Tuyen Pham[3]
[1]Thai Binh University
[2]7979 Equipment Company Limited, huyen.phuong.ftu@gmail.com
[3]Thanh Dong University

Abstract:
The objective of the study is to assess the mediating role of environmental capabilities in the relationship between green-oriented international trade policies and sustainable trade performance of exporting enterprises in Vietnam. The results of the test on 168 Vietnamese exporting enterprises in the textile and seafood industries show that environmental capabilities play a statistically significant mediating role in the relationship between green-oriented international trade policies and sustainable trade performance of exporting enterprises in Vietnam.
Keyword: *Environmental capabilities, green-oriented international trade policies, sustainable trade performance, Vietnam*

1. INTRODUCTION

In the context of increasing globalization and climate change, the relationship between trade growth and environmental protection has become one of the central themes of sustainable development economics. According to the OECD (2021), international trade can be both a cause of cross-border pollution due to increased production and transportation, but also a tool to spread clean technology and promote environmental standards in production and consumption. However, this impact depends greatly on how each country's trade is managed.

In developing economies, including Vietnam, trade integration is often accompanied by the goal of rapid growth through the export of resource-intensive goods and cheap labor. This growth model, if not well controlled, can easily lead to a "brown development trap" – where GDP growth is accompanied by resource degradation, environmental degradation and increased ecological inequality (Barbier, 2010). According to the UNCTAD report (2023), many developing countries are still unable to effectively integrate environmental standards into trade policies due to the lack of a synchronous legal framework, weak institutional capacity, and international competitive pressures.

Vietnam is currently one of the countries with the highest trade openness in the world (over 180% of GDP in 2022, according to the World Bank, 2023). Along with that, our country has signed a series of new-generation trade agreements such as CPTPP, EVFTA, UKVFTA – in which for the first time included binding environmental provisions. This creates a pressure and an opportunity for Vietnam to restructure its trade management model in a more sustainable direction. However, according to CIEM (2021), there is currently no theoretical framework or policy model in Vietnam that comprehensively integrates trade and the environment. The current policies are still fragmented, lacking linkage between the Ministry of Industry and Trade and the Ministry of Natural Resources and Environment; between national strategic planning and the implementation behavior of enterprises.

In addition, most of the current research in Vietnam on trade still focuses mainly on growth, competitiveness or exports, without paying enough attention to the environmental impact or the role of trade in the transition to a green economy (Nguyen & Pham, 2020; Dang et al., 2021). In addition, international studies such as Grossman & Krueger (1995), Copeland & Taylor (2004) and Frankel & Rose (2005) also show a nonlinear and multidimensional relationship between trade and the environment – something that traditional models cannot explain in the context of transition economies such as Vietnam.

The structure of the article in addition to the introduction includes an overview of the research, development of research hypotheses, research methods, research results, and conclusions.

2. Literature review and development hypothesis

A Green-Oriented International Trade Policy is a set of principles, regulations, agreements and technical measures adopted by countries or economic regions to promote trade in line with the goals of environmental protection and sustainable development (UNEP, 2018; OECD, 2020).

In essence, these policies are not only limited to eliminating trade barriers but also actively integrate environmental criteria into the content of trade commitments such as: carbon emission standards, eco-label regulations, tax incentives for environmentally friendly goods, etc or the Carbon Border Adjustment Mechanism (CBAM) as being implemented in the EU (European Commission, 2023).

According to Porter & van der Linde (1995), the application of environmental regulations in trade does not necessarily reduce competitiveness but can create an incentive for businesses to innovate. New-generation trade agreements such as CPTPP, EVFTA or UKVFTA all integrate binding provisions on the environment, showing that the trend of international trade is increasingly shifting towards greening (Zhang et al., 2022).

For businesses, green-oriented international trade policies are both a challenge (because they have to comply with higher standards) and an opportunity to affirm brand prestige, access high-value markets and take advantage of tariff incentives. In Vietnam, according to the Ministry of Industry and Trade (2023), key export industries such as textiles, footwear, food processing, etc. are under pressure for green transformation to meet requirements from international partners. In conclusion, green-oriented international trade policy is an institutional factor that plays a leading role, creating a framework to promote domestic enterprises to improve environmental capacity to achieve sustainable trade results in the context of green globalization.

Based on modern trade and environmental theories, along with empirical evidence from developing countries with similar characteristics to Vietnam. Green-Oriented International Trade Policies (GTPs) include regulations, standards, commitments and trade terms designed to ensure that cross-border trade activities do not harm the environment, and in many cases promote the adoption of clean technologies. energy efficiency and sustainable resource management (OECD, 2011; UNCTAD, 2020).

According to the Induced Environmental Innovation Theory (Jaffe et al., 2002), requirements from the external environment – including international policies and standards – can put pressure on domestic enterprises to adjust their production strategies and invest in green technology capacity. In that context, green trade policies have become an important stimulus for the transformation of business behavior towards environmental friendliness.

International empirical studies have documented a positive relationship between green trade policies and corporate environmental capacity. For example, research by Berman & Bui (2001) in the United States indicates that businesses operating in areas with strict environmental standards have invested more heavily in pollution control equipment and green technology innovation. In China, research by Yu & Zhao (2018) proves that participation in bilateral trade agreements with environmental clauses has motivated exporters to upgrade their waste treatment processes and switch to environmentally friendly materials.

In the case of Vietnam, agreements such as EVFTA, CPTPP or UKVFTA all include strict environmental provisions that require exporters to comply with standards on traceability, greenhouse gas emissions, and ecological safety in the supply chain. Research by CIEM (2021) and Tran et al. (2022) shows that, despite many difficulties in terms of resources and technological level, many Vietnamese enterprises have actively upgraded their production processes, invested in energy-saving machinery and built an ISO 14001 environmental management system to meet the requirements of green markets such as the EU and Japan.

In addition, the concept of Environmental Capabilities not only includes technology, but also includes governance, supervision, and organizational culture related to environmental protection (Hart, 1995). Green trade policies, through cross-border standardization and monitoring mechanisms, act as an institutional agent that forces businesses to develop this capacity to maintain market access.

From the above theoretical and empirical arguments, it can be affirmed that a green-oriented international trade policy has a role in promoting Vietnamese exporters to improve their environmental capacity to meet competitive requirements and comply with global standards. Therefore, the H1 hypothesis is given as follows:

H1: Green-oriented international trade policies have a positive impact on the environmental capacity of exporters in Vietnam.

Environmental Capabilities (EC) of an enterprise is understood as a set of resources, processes and skills that enable enterprises to effectively implement environmentally friendly production and operation strategies (Hart, 1995; Aragón-Correa & Sharma, 2003). These competencies include the ability to innovate clean technologies, manage green supply chains, comply with international environmental regulations, and integrate ecological factors into business strategies.

According to the Resource-Based View (RBV) theory, specific competencies such as environmental competencies – if scarce, difficult to imitate and valuable – will create a sustainable competitive advantage (Barney, 1991). Hart (1995) developed a "natural-resource-based view" model that extends RBV to the environmental sector and argues that businesses with high environmental capacity will gain a competitive advantage in the context of green globalization.

Christmann's (2000) empirical research proves that environmental technology capabilities help businesses save operating costs, access export markets with high environmental standards and increase brand value. With regard to international trade, as markets such as the EU, the US, and Japan increasingly apply environmental barriers (environmental NTBs), only businesses with solid environmental capabilities can access these markets sustainably (Testa et al., 2012).

In developing countries, environmental capacity is also considered a key factor determining the ability to transform the trade model from resource-intensive to high-value-added. Research by Zhu & Sarkis (2004) in China shows that companies that adopt cleaner production processes have higher export efficiency in terms of profits, contract stability, and the ability to maintain long-term international partners.

In Vietnam, VCCI's report (2022) shows that exporters who invest in environmental management systems (ISO 14001), recycle raw materials, or use renewable energy all have a higher export revenue growth rate than the rest of the group. In addition, environmental competence also helps businesses avoid legal risks and increase compliance when exporting to markets with strict standards.

Based on the above theoretical basis and empirical evidence, this study hypothesizes:

H2: The environmental capacity of enterprises has a positive impact on the sustainable trade results of Vietnamese exporters

Sustainable Trade Performance (STP) is a concept that reflects the ability of enterprises to maintain and expand international trade activities in a stable manner, and at the same time meet long-term economic, environmental and social requirements (UNCTAD, 2021). In essence, STP is a combination of traditional trade criteria (such as export revenue, market share, cost-effectiveness) and non-financial factors such as environmental regulatory compliance, social responsibility, and the ability to adapt to the trend of green globalization.

According to Linton, Klassen & Jayaraman (2007), STP is not only measured by financial performance but also by the ability to maintain high-standard export markets such as the EU, the US, and Japan through sustainability certifications such as ISO 14001, FSC, or low-carbon supply chain certification. Peng & Lin (2008) adds that sustainable trade reflects the convergence between long-term competitiveness and compliance with international environmental institutions.

From the perspective of businesses, STP can be manifested through: (i) maintaining stable export growth in markets with high sustainable requirements; (ii) the ability to upgrade the value chain in the direction of reducing emissions and saving resources; and (iii) the ability to take advantage of green trade policies (such as EVFTA, CPTPP) to expand market share. Therefore, STP reflects the overall achievement of enterprises in the context of sustainable globalization, which is the result of the interaction between policy, intrinsic capacity and institutional context (Testa et al., 2012; UNCTAD, 2021).

The theoretical basis for mediation in the SEM model is that if a policy does not directly affect the output, but changes the mediating factor – in this case, environmental capacity – it can have an indirect impact. The H3 hypothesis is based on the link between H1 and H2: green trade policies promote enterprises to invest in clean technologies (Dechezleprêtre & Sato, 2017), thereby improving competitiveness and sustainable export results. Research by Testa et al. (2012) shows that businesses affected by trade agreements with environmental clauses will improve their environmental capacity to maintain international market share. Thus,

environmental capacity plays a role as a bridge between policy and trade outcomes, reinforcing the H3 hypothesis. From there, the author proposes the H3 hypothesis:

H3: Green-oriented international trade policies have an indirect impact on sustainable trade outcomes through the intermediary of the environmental capacity of enterprises.

3. Research method

To empirically test the proposed research model, a quantitative survey was conducted targeting exporting enterprises operating in Vietnam's textile and seafood industries—two of the country's leading export sectors with high exposure to green trade requirements from international markets.

A total of 168 valid responses were collected from managers, directors, or export officers at exporting firms across various regions of Vietnam, including Ho Chi Minh City, Can Tho, Da Nang, and Hai Phong. The survey was administered between May and July 2025 using both online questionnaires and in-person distribution during industry workshops and export promotion events. Textile and Garment Sector: 93 enterprises (55.4%) and eafood Export Sector: 75 enterprises (44.6%)

These firms were selected based on the following criteria: They are currently engaged in international export activities. They operate in sectors that are highly regulated by green trade standards. They have at least 3 years of export experience. They have interacted with green or environmental compliance requirements from importing countries (e.g., EU, US, Japan). The use of purposive sampling ensured that only firms relevant to the study's context—green-oriented trade policy and sustainability in export performance—were included in the analysis.

The textile and seafood sectors were chosen for several reasons: Both sectors are key contributors to Vietnam's GDP and export turnover, collectively accounting for more than USD 60 billion in export value annually. They face intense pressure from international buyers regarding environmental practices, such as wastewater treatment, carbon footprint reduction, and sustainable sourcing. These industries are frequently targeted in green trade regulations under FTAs like the EVFTA and CPTTP, including technical barriers to trade (TBT), sanitary and phytosanitary measures (SPS), and environmental labeling requirements. Many firms in these sectors are in the process of upgrading their environmental capacity through cleaner production, green certification (e.g., ASC, BSCI, OEKO-TEX), and digital traceability. By focusing on these two sectors, the study offers valuable insights into how green trade policies shape the sustainable trade outcomes of Vietnamese exporters, especially in the context of rising global climate concerns and regulatory tightening in destination markets.

The research model is as follows:

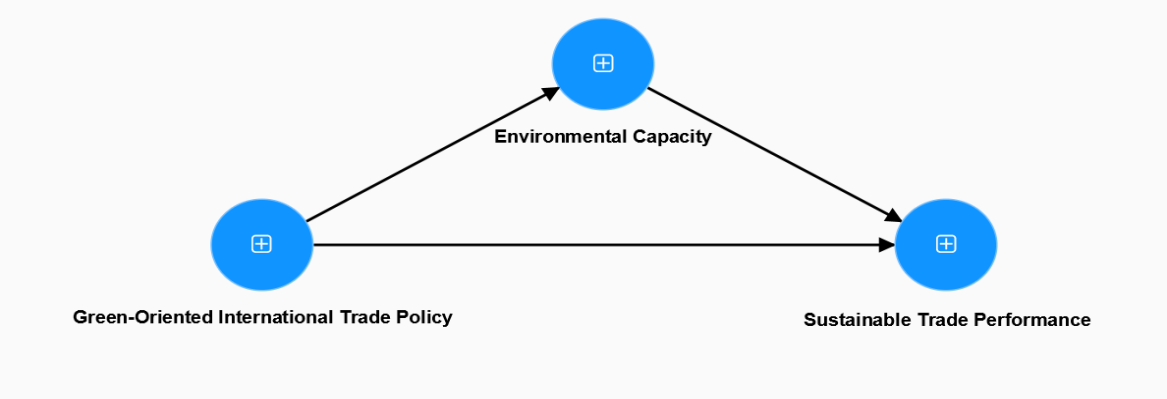

Fig. 1. Research Model

In which, the research variables are as follows:

Table 1. Nature of research concepts and references

Research variables	Essence concept	References
1. Green-oriented international trade policy	It is a set of regulations, agreements, standards, and tools that regulate trade to integrate environmental objectives into the market opening process, including emission criteria,	UNEP (2018), OECD (2020), European Commission (2023),

Research variables	Essence concept	References
	green product standards, eco-labels, carbon taxes, and environmental provisions in next-generation FTAs.	Porter & van der Linde (1995), Zhang et al. (2022)
2. Environmental capacity of exporting enterprises	It is a collection of resources, skills, and systems that enable businesses to implement environmentally friendly strategies such as clean technology innovation, green supply chain management, and compliance with international environmental standards.	Hart (1995), Aragón-Correa & Sharma (2003), Barney (1991), Zhu & Sarkis (2004), VCCI (2022)
4. Sustainable trade results of exporters	It is the ability to maintain and expand international trade in the long term in a sustainable direction, both achieving economic efficiency and ensuring compliance with global environmental and social standards. Including export growth, market access with green requirements, and green innovation capacity in the value chain of export enterprises	UNCTAD (2021), Linton et al. (2007), Peng & Lin (2008), Testa et al. (2012), OECD (2020)

Table 2: The scale of the study variables is as follows:

Green Oriented International Trade Policy (GOITP)

Source: Zhang et al. (2022); UNEP (2018); OECD (2020)

Horse	Indicator content	References
GOITP1	Current international trade agreements integrate environmental criteria in the content of commitments.	Zhang et al. (2022)
GOITP2	Businesses must comply with emission standards and eco-labels to access the international market.	UNEP (2018)
GOITP3	Regulations such as CBAM in the EU have a strong impact on export activities.	European Commission (2023)
GOITP4	Green trade policies are the driving force for businesses to innovate clean technology.	Porter & van der Linde (1995)

Environmental capacity of exporting enterprises (EC)

Source: Hart (1995); Aragon-Correa & Sharma (2003); Zhu & Sarkis (2004); Testa et al. (2012)

Horse	Indicator content	References
EC1	The enterprise has environmental management system certification such as ISO 14001.	Testa et al. (2012)
EC2	Businesses invest in clean production technology to reduce emissions.	Hart (1995)
EC3	Enterprises actively control environmental risks in the value chain.	Aragon-Correa & Sharma (2003)
EC4	Businesses apply green supply chain management in export.	Zhu & Sarkis (2004)
EC5	The enterprise has a department/personnel in charge of environmental management.	Testa et al. (2012)

Sustainable Trade Results (STP) of exporters in Vietnam

Source: Linton et al. (2007); Peng & Lin (2008); Testa et al. (2012); UNCTAD (2021)

Horse	Indicator content	References
STP1	The business maintains export growth to markets that require high sustainable standards.	Linton et al. (2007)
STP2	The enterprise has obtained green certification (ISO 14001, FSC, Carbon-neutral...).	Testa et al. (2012)
STP3	Businesses upgrade products to save energy and protect the environment.	Peng & Lin (2008)

Horse	Indicator content	References
STP4	Businesses make good use of green trade agreements to expand market share.	UNCTAD (2021)

In this study, Partial Least Squares Structural Equation Modeling (PLS-SEM) was used to test the research model and hypotheses, through SmartPLS software version 4.1. PLS-SEM is a suitable method in the context of exploratory research, moderate research samples (n = 168), and models with complex nature with intermediate relationships (Hair et al., 2021).

The data analysis process using SmartPLS 4.1 software is carried out through two main steps:

Step 1: Measurement Model Evaluation

The goal is to ensure the reliability and value of the scales: Composite Reliability (CR): All indicators are greater than 0.7, indicating acceptable reliability (Hair et al., 2021). Average Variance Extracted (AVE): AVE values all exceed the threshold of 0.5, proving that the observed variable explains the potential variable well. Discriminant Validity: Tested by the Fornell-Larcker criterion

Step 2: Structural Model Evaluation: After confirming the reliability of the measurement model, the structural model is tested with the following criteria: Path Coefficients: β values are estimated to determine the direction and degree of influence between variables. Statistical significance (p-value): Performed by bootstrapping method (5000 samples) to test the meaning of hypotheses. The relationships all had a $p < 0.001$, indicating high statistical significance. R^2 value: The R^2 of the variables "Environmental Capacity" = 0.213 and "Sustainable Trade Performance" = 0.212, indicates that the model is capable of explaining the average level (Chin, 1998). Intermediate effects: The intermediate role of the "Environmental Capacity" variable was tested using indirect effect analysis in bootstrapping, and the results showed that the intermediate effect was meaningful.

4. RESULS

Measurement model evaluation results

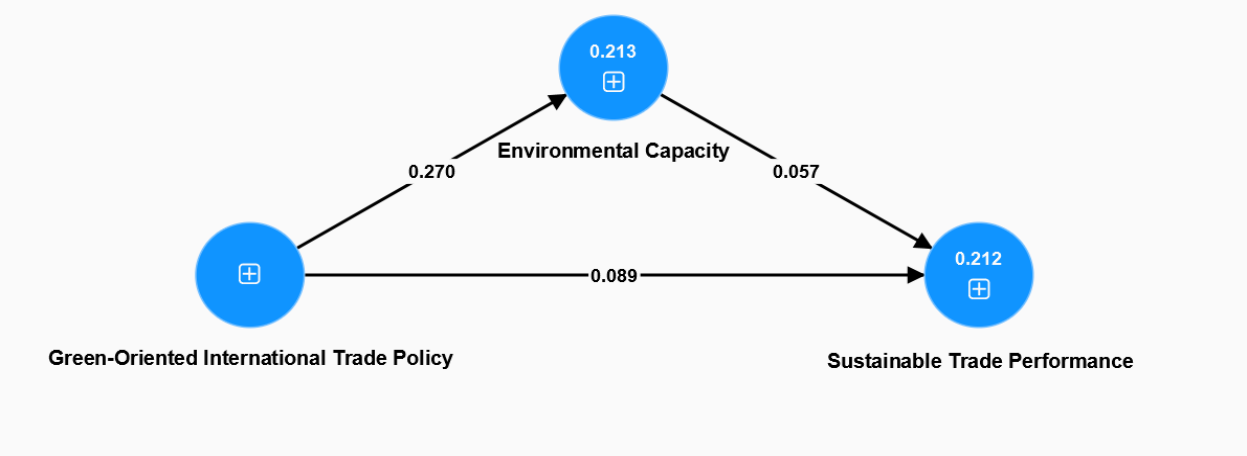

Fig. 2. Measurement model evaluation results

Table 3 Construct reliability and validity

	Cronbach's alpha	Composite reliability (rho_a)	Composite reliability (rho_c)	Average variance extracted (AVE)
Environmental Capacity	0,872	0,873	0,921	0,796
Green-Oriented International Trade Policy	0,885	0,890	0,920	0,743
Sustainable Trade Performance	0,887	0,889	0,922	0,746

International Journal of Environmental Sciences
ISSN: 2229-7359
Vol. 11 No. 20s, 2025
https://theaspd.com/index.php

Table 4: Discriminant validity - Fornell-Larcker criterion

	Environmental Capacity	Green-Oriented International Trade Policy	Sustainable Trade Performance
Environmental Capacity	0,892		
Green-Oriented International Trade Policy	0,461	0,862	
Sustainable Trade Performance	0,377	0,409	0,864

Table 5: Model fit

	Saturated model	Estimated model
SRMR	0,052	0,052
d_ULS	0,175	0,175
d_G	0,108	0,108
Chi-square	450,163	450,163
NFI	0,900	0,900

The results of evaluating the measurement model through the above tables show that the research variables have statistical significance that satisfy the conditions for structural model validation.

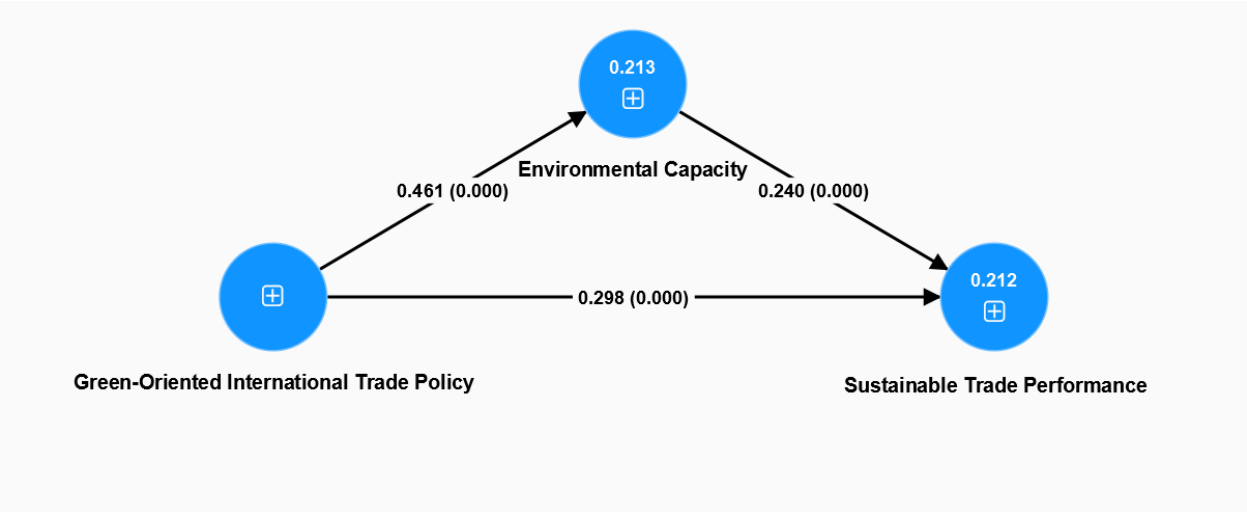

Fig. 3. Results of research hypothesis verification

The results of the structural model test by the PLS-SEM method show that the relationship between the three main variables of the model: Green-Oriented International Trade Policy (GTP), Environmental Capacity (EC) and Sustainable Trade Performance (STP) are statistically significant and have positive impacts.

With GTP → EC hypothesis (β = 0.461, p = 0.000), this result shows that the green-oriented international trade policy has a significant impact on improving the environmental capacity of enterprises. This is consistent with Institutional Theory, according to which external environmental pressures, especially international policies and regulations, can motivate domestic institutions to develop adaptive capacities (DiMaggio & Powell, 1983). Especially in the context of Vietnam, requirements from new-generation free trade agreements such as EVFTA or CPTPP have promoted textile and seafood enterprises to apply clean technology, achieve green certification, and comply with sustainable production processes to access the market (Nguyen & Nguyen, 2023).

With EC → STP hypothesis (β = 0.240, p = 0.000), it is shown that environmental competence has a positive and statistically significant effect on sustainable trade performance, which proves that enterprises with higher

environmental competence (such as using renewable energy, wastewater treatment systems, processes that meet international environmental standards) often achieve better long-term efficiency in international trade. This result is in line with Hart's (1995) thesis in the Natural Resource-Based View (NRBV) theoretical framework, which argues that competencies associated with the environment are the key factors to help businesses achieve sustainable competitive advantages.

With GTP → STP hypothesis (β = 0.298, p = 0.000), this means that green trade policies also have a direct and positive impact on sustainable trade performance, reflecting that the application of environmentally oriented policies is not only a barrier but also an opportunity for businesses to improve their brand image, meeting global green consumption demand and maintaining export market share. This result is in line with research by Leonidou et al. (2013), which shows that exporting companies when meeting environmental regulations and standards will enhance their international reputation, thereby improving trade performance and maintaining long-term growth.

The hypothesis of testing the intermediary role of environmental capacity, the results also show that environmental capacity plays a part of the intermediary role in the relationship between green trade policy and sustainable trade efficiency. Although GTP directly affects STP (β = 0.298), GTP also indirectly affects STP through EC (total indirect effect = 0.461 * 0.240 = 0.11064). This shows that environmental policy not only has an external effect but also promotes change within the business, which in turn leads to more sustainable results.

5. CONCLUSIONS

This study has contributed to clarifying the relationship between green-oriented international trade policies, environmental capacity of enterprises, and sustainable trade efficiency in the context of Vietnamese exporters, especially in the two key industries of textiles and garments and fisheries.

Based on a theoretical model combining Institutional Theory and Natural-Resource-Based View (NRBV), the results of the PLS-SEM test show that green trade policies not only directly impact sustainable trade efficiency but also indirectly through improving the internal environmental capacity of enterprises. Specifically, environmental capacity plays a mediating role in part in this relationship.

This finding highlights the importance of building green competencies as an important adaptation strategy for businesses to maintain and expand their competitive advantage in international markets that are increasingly influenced by environmental standards. In the context of Vietnam's active integration through new-generation free trade agreements such as EVFTA and CPTPP, internal environmental capacity should be considered a long-term investment priority, rather than just responding to external pressure.

In addition, the results of the study also reinforce the view that green trade policies, if properly designed, will not create a burden, but on the contrary, can promote innovation, technological upgrades, and improve sustainable business performance (Porter & van der Linde, 1995; Leonidou et al., 2013).

Academically, this study contributes to the expansion of the NRBV theoretical framework in the context that the market is increasingly associated with sustainable development requirements. In practical terms, policymakers should consider designing technical, financial, and communication assistance programs to enhance the environmental capacity of exporters – especially small and medium-sized enterprises – as part of a national green trade strategy.

REFERENCES

1. Chin, W. W. (1998). The partial least squares approach to structural equation modeling. Modern Methods for Business Research, 295(2), 295–336.
2. DiMaggio, P. J., & Powell, W. W. (1983). The iron cage revisited: Institutional isomorphism and collective rationality in organizational fields. American Sociological Review, 48(2), 147–160.
3. DiMaggio, P. J., & Powell, W. W. (1983). The iron cage revisited: Institutional isomorphism and collective rationality in organizational fields. American Sociological Review, 48(2), 147–160. https://doi.org/10.2307/2095101
4. Hair, J. F., Hult, G. T. M., Ringle, C. M., & Sarstedt, M. (2021). A Primer on Partial Least Squares Structural Equation Modeling (PLS-SEM) (3rd ed.). Sage Publications.
5. Hair, J. F., Hult, G. T. M., Ringle, C. M., & Sarstedt, M. (2021). A Primer on Partial Least Squares Structural Equation Modeling (PLS-SEM) (3rd ed.). Sage Publications.
6. Hart, S. L. (1995). A natural-resource-based view of the firm. Academy of Management Review, 20(4), 986–1014.

7. Hart, S. L. (1995). A natural-resource-based view of the firm. Academy of Management Review, 20(4), 986–1014 https://doi.org/10.5465/amr.1995.9512280033
8. Henseler, J., Ringle, C. M., & Sarstedt, M. (2014). A new criterion for assessing discriminant validity in variance-based structural equation modeling. Journal of the Academy of Marketing Science, 43(1), 115–135.
9. Henseler, J., Ringle, C. M., & Sarstedt, M. (2014). A new criterion for assessing discriminant validity in variance-based structural equation modeling. Journal of the Academy of Marketing Science, 43(1), 115–135. https://doi.org/10.1007/s11747-014-0403-8
10. Leonidou, L. C., Katsikeas, C. S., & Morgan, N. A. (2013). Greening the marketing mix: Do greeners lead to greener? International Journal of Business and Social Science, 44(1), 20–42.
11. Leonidou, L. C., Katsikeas, C. S., & Morgan, N. A. (2013). Greening the marketing mix: Do greeners lead to greener? International Journal of Business and Social Science, 44(1), 20–42.
12. Nguyen, T. T., & Nguyen, H. L. (2023). Green trade policy and sustainable development: A perspective from Vietnamese exporters. Journal of Asian Business and Economics, 15(3), 55–72.
13. Nguyen, T. T., & Nguyen, H. L. (2023). Green trade policy and sustainable development: A perspective from Vietnamese exporters. Journal of Asian Business and Economics, 15(3), 55–72.
14. Porter , M. E., & van der Linde, C. (1995). Toward a new conception of the environment–competitiveness relationship. The Journal of Economic Perspectives, 9(4), 97–118. https://doi.org/10.1257/jep.9.4.97
15. Zhang, B., Bi, J., Fan, Z., Yuan, Z., & Ge, J. (2022). Green trade, environmental regulation and sustainable competitiveness: A review of mechanisms and empirical studies. Journal of Cleaner Production, 354, 131707. https://doi.org/10.1016/j.jclepro.2022.131707