千葉商科大学サステナビリティ研究

Journal of Sustainability at the Chiba University of Commerce

第1巻
別冊
Vol. 1
separate volume

千葉商科大学サステナビリティ研究所
Research Center for Sustainability
Chiba University of Commerce

CUC
CHIBA UNIVERSITY
OF COMMERCE

ISSN 2759-7067

Table of Contents

THE DETERMINANTS OF ORGANIC FOOD CONSUMPTION OF YOUNG PEOPLE: THEORETICAL RESEARCH ON VIETNAMESE STUDENTS

Do Hoang Phuong, Nguyen Phuong Linh, Tran Ha Vy, Pham Thi Mai Chi

(Vietnam National University – University of Economics and Business, Vietnam),

Do Nguyet Minh (Thuy Loi University, Vietnam)

Abstract:

In recent years, Vietnam is experiencing rapid economic growth and urbanization, the demand for organic food is rising, yet research on the specific determinants influencing young people's organic food consumption remains limited. This study aims to evaluate the factors affecting university students' intention to consume organic foods in Hanoi, Vietnam. The research employed the Theory of Planned Behaviour and survey methodology with a sample size of 172. Analytical tools encompassed descriptive statistics, Cronbach's Alpha reliability test, multiple regression analysis and Exploratory Factor Analysis (EFA). The results reveal that environmental concerns, health awareness, subjective norms, and product quality all impact the intention to consume organic foods. Based on the research, several recommendations are proposed for businesses, government, consumers, and researchers, to promote the production and consumption of organic foods. In addition, the research also pointed out that education plays a vital role in encouraging young people to be aware of organic foods, and environmental issues in general.

Keywords: Organic food, consumption, young people, university students, education,

Contact Do Hoang Phuong: phuongdh@vnu.edu.vn

environment issues, sustainable development.

1. Introduction

The Sustainable Development Goals (SDGs) are paramount for countries worldwide, as they provide a universal framework for addressing the most pressing global challenges. Adopted by all United Nations member states in 2015, the 17 SDGs aim to eradicate poverty, reduce inequality, promote economic growth, protect the environment, and ensure peace and justice by 2030. For countries, the SDGs serve as a blueprint for sustainable development, guiding them toward creating more equitable, inclusive, and resilient societies. The SDGs provide a clear roadmap for developing nations to lift citizens out of poverty (SDG 1), improve healthcare and education, and create job opportunities. For developed nations, they serve as a reminder of their role in supporting sustainable growth globally, promoting clean energy (SDG 7) and responsible consumption (SDG 12). Together, these goals aim to build an equitable, just, and sustainable world for all.

Organic food, produced without harmful pesticides and synthetic fertilizers, contributes directly to SDG 12 (Responsible Consumption and Production) by reducing environmental impact and promoting sustainable farming practices. In recent years, the global organic food market has experienced remarkable growth, driven by increasing consumer awareness of health, environmental sustainability, and food safety. According to the Research Institute of Organic Agriculture (FiBL) and IFOAM (2023), the global organic food market reached over $130 billion in 2022, reflecting a steady upward trend. In Vietnam, this sector has also expanded significantly, with the Vietnam Organic Agriculture Association (VOAA) reporting a 30% annual growth rate in organic food sales (VOAA, 2022).

Organic farming promotes biodiversity, reduces water pollution, and lowers greenhouse gas emissions, aligning with SDG 13 (Climate Action). Moreover, encouraging the next generation to choose organic food supports SDG 3 (Good Health and Well-being) by reducing exposure to harmful chemicals, and fostering long-term health benefits. As the global demand for sustainable solutions increases, shifting food habits toward organic consumption can help drive systemic change and contribute to a healthier, more sustainable future for all.

Despite this importance, organic food consumption among young Vietnamese consumers remains an underexplored area, requiring deeper investigation into their motivations and decision-making processes. Young consumers, particularly university students, represent a crucial segment for the future of organic food consumption. Studies have shown that health concerns, environmental consciousness, and perceived food safety are among the key drivers influencing organic food choices (Yadav & Pathak, 2017; Thøgersen et al., 2019). Therefore, supporting eco-friendly products is urgent not only for young people's health but also for the planet's well-being.

In Vietnam, food safety has been remaining as a crucial social issue. In 2019, the whole country recorded 76 cases of food poisoning, making 2,000 people sick, 1,918 people hospitalized leading to 8 deaths (Labor Newspaper, 2019). Moreover, Vietnam is facing challenges in environmental protection and sustainable development as society's consumer demand increases because of population growth. We believe that young people shall be the pioneer to make the movement a better and healthier society.

Therefore, this research focuses on understanding the key factors influencing organic food consumption among university students in Hanoi. It aims to assess these factors' impact on consumption intentions and propose practical solutions to encourage organic food habits, thereby contributing to the development of Vietnam's organic food market. Furthermore, this research also

offers educational solutions on how we can convince younger customers to demand and consume organic food, as well as contribute to SDG actions in the future.

2. Literature review

2.1. Determinants of consumption

Teng and Wang's (2015) study in Taiwan emphasizes the role of trust as a crucial antecedent to attitude and as an intermediary between information disclosure, cognitive knowledge, and organic purchase intention. However, the study reveals that cognitive knowledge does not significantly affect consumer attitudes, raising the issue that increasing knowledge alone is insufficient to form a positive attitude; instead, emphasis must be placed on how this knowledge is used to strengthen consumer trust.

Similarly, Secapramana and Katargo (2019) in Indonesia also found that positive attitudes and trust in organic food, along with subjective norms, strongly influence purchase intentions. This suggests that trust and social influence may be the main drivers encouraging consumers to choose organic products. Research in the Czech Republic by Švecová and Odehnalová (2019), focusing on young consumers, particularly students, shows that factors such as personal attitudes and subjective norms are key drivers influencing organic food purchase intentions. However, there are limitations in not considering specific organic product categories. If organic products are promoted as a support for clean and sustainable energy, they could help achieve the United Nations' Sustainable Development Goal 7.

In India, Agarwal's (2019) research provides an interesting perspective, suggesting that subjective norms have a greater impact than attitudes on the decision to buy organic food. This indicates that the organic food industry needs to fully leverage marketing strategies that focus on

the influence of celebrities or social norms to boost its impact.

In Vietnam, studies such as that of Hoang Thi Bao Thoa (2019) applied the Theory of Planned Behavior (TPB) to expand the analysis, indicating that attitudes, subjective norms, and trust are the most important factors influencing consumption intentions. Interestingly and contrary to initial expectations, concern for the environment and perceived behavioral control had no significant impact, suggesting that personal perceptions related to health and social factors are more important. In the context of sustainable development, environmental concern can promote organic food consumption intentions, as organic products are often perceived to have less negative environmental impact compared to traditional food. Young people informed about organic food consumption can contribute to the use of clean and sustainable energy.

Research by Nguyen Kim Nam (2015) and Nguyen Thao Nguyen (2021) in Ho Chi Minh City further reinforces this argument by emphasizing that awareness of food safety, health, and quality plays a crucial role in the decision to purchase organic food. These studies show that the more information consumers receive about the benefits of organic food, the better they understand its value, leading to more positive purchasing habits. In the context of clean and sustainable energy, organic food consumption can be seen as part of a sustainable lifestyle, as organic products are often associated with less polluting production methods. However, the research does not directly mention clean energy but focuses on health and environmental benefits.

2.2. Research Model and Hypotheses

Factors used in the model	**Teng and Wang (2015)**	**Švecová and Odehnalová (2019)**	**J Rana và J Paul (2017)**	**Chu (2018)**	**Le Thi Thuy Dung (2017)**	**Huynh Đinh Le Thu (2020)**	**Nguyen Thao Nguyen (2021)**
Environmental Concern			x	x	x		x
Food Safety			x				x

Health Consciousness			x	x	x		x
Subjective Norms	x	x				x	
Product Quality	x	x	x			x	x
Product Price			x		x		x
Purchase Intention	x	x		x		x	x

Source: Compiled by the author, 2024

Based on the findings from both international and domestic studies, this research model is constructed using Ajzen's (1991) Theory of Planned Behavior (TPB). According to this theory, an individual's attitude is a key factor influencing their behaviour patterns. Additionally, health and price factors are considered as representations of perceived behavioral control. The health and safety of food are primary factors driving consumers to choose safe products, such as organic food (Zanoli & Aspetti, 2002; Padel & Foster, 2005).

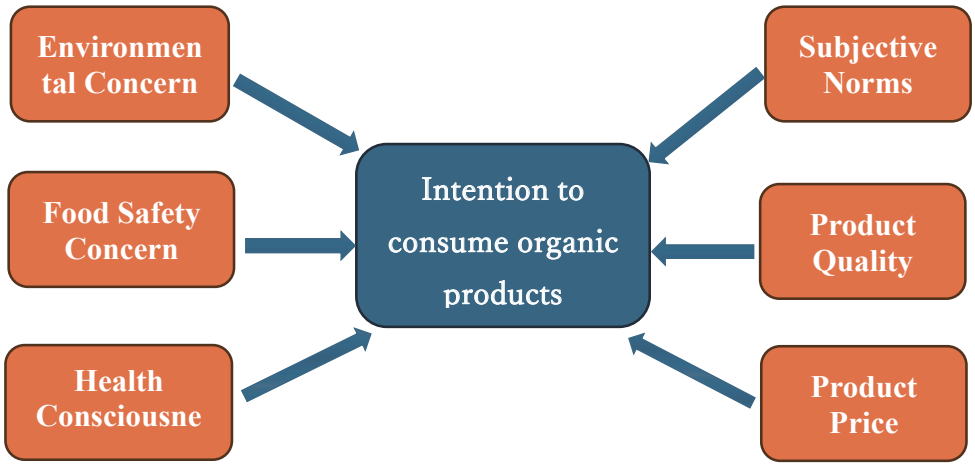


Figure 1: Proposed research model

The relationships between the factors were captured above through a structured analysis process. From this research overview, the author identified the cited relationships between the identified factors and intention to consume organic products by young people (shown in Figure 1). From this proposed theoretical framework, the authors build up hypotheses for our research with 6 factors including: environmental concern, food safety concern, health consciousness, subjective norms, product quality, and product price. Each factor is projected to have a positive influence on

the intention to consume organic products by young people.

- **Hypothesis H1:** Environmental concern has a positive impact on the intention to consume organic food.
- **Hypothesis H2:** Perceived food safety encourages the intention to consume organic food.
- **Hypothesis H3:** Health consciousness has a positive relationship with the intention to consume organic food.
- **Hypothesis H4:** Subjective norms positively influence the intention to consume organic food.
- **Hypothesis H5:** Product quality has a positive impact on consumers' intention to purchase organic food.
- **Hypothesis H6:** Reasonable product pricing will encourage the intention to consume organic food.

Table 2.2. Characteristics of the Research Sample by Demographic Factors

Coding	**Scale**	**Reference**
Environmental Concern (EC)		(Voon, Ngui, & Agrawal, 2011)
EC1	I am very concerned about environmentally friendly products.	
EC2	I am worried about environmental pollution issues.	
EC3	I am aware of government policies promoting organic food consumption.	
EC4	People advise me to use organic food to protect the environment.	
Food Safety Concern (FSC)		
FSC1	I am concerned about food hygiene and safety.	Crutchfield và Roberts, 2000
FSC2	I always care about the origin of the products.	
FSC3	I think organic food is free from chemicals.	
Health Consciousness (HC)		
HC1	I care about my health.	(Shaharudin, Pani,

HC2	I think health is essential in life.	Mansor, & Elias, 2010)
HC3	I often think about health-related issues.	
HC4	I am concerned about whether food is good for health.	
Subjective Norms (SN)		
SN1	Most people around me consume organic food.	(Ajzen, 1991)
SN2	The government encourages consumers to use organic food.	
SN3	The media provides a lot of information about organic food nowadays.	
SN4	My family members believe I should consume organic food.	
Product Quality (PQ)		
PQ1	I think organic food is of high quality.	(Shaharudin, Pani, Mansor, & Elias, 2010)
PQ2	I think organic food is of higher quality than conventional food products.	
PQ3	I feel safe using organic food because its quality is ensured through international standard certification systems.	
PQ4	Organic food avoids health risks.	
Product Price (PP)		
PP1	I think the price of organic food is high.	(Saleki & Seyedsaleki, 2012)
PP2	I don't mind paying more for organic food.	
PP3	A reasonable price is very important to me when buying food.	
PP4	I think safe food is very costly.	
Intention to Purchase (Int)		
Int1	I intend to purchase organic food.	(Sweeney, Soutar, & Johnson, 1999)
Int2	I am willing to pay more for organic food for better health.	
Int3	I will actively search for organic food.	
Int4	I will actively seek organic food.	
Int5	I will buy organic food for health reasons.	

Source: Compiled by the author, 2024

3. Methodology

3.1. Data

Quantitative research conducted an online survey of 172 university students in Hanoi regarding their intentions to consume organic food, focusing on demographic factors such as gender, academic year, and monthly income.

3.2. Analysis methods

Exploratory factor analysis (EFA) is a formal classical measurement model used when both observed and latent variables are assumed to be measured at the interval level. The characteristic of EFA is that the observed variables are first standardised (mean equal to 0 and standard deviation equal to 1). EFA was performed on the inter-item correlation matrix. In EFA, a latent variable is called a factor and the relationship between latent variables and observed variables is called factor loading. Factor loadings are standardised regression weights. Because EFA is an exploratory technique, there is no expected load distribution; therefore, it is not possible to statistically test whether factor loadings are similar across cultural groups.

Linear regression is a data analysis technique that predicts the value of unknown data using another known and related data value. It mathematically models unknown or dependent variables and known or independent variables as a linear equation.

The multiple linear regression correlation model of the factors is expressed as follows:

$$\mathbf{Int} = \boldsymbol{\beta 0} + \boldsymbol{\beta 1} * \boldsymbol{EC} + \boldsymbol{\beta 2} * \boldsymbol{FSC} + \boldsymbol{\beta 3} * \boldsymbol{HC} + \boldsymbol{\beta 4} * \boldsymbol{SN} + \boldsymbol{\beta 5} * \boldsymbol{PQ} + \boldsymbol{\beta 5} * \boldsymbol{PP}$$

4. Results and discussion

The results showed that female students (55.8%) had a higher intention to consume

organic food than male students (44.2%). Third-year students made up the highest proportion (27.3%), followed by fourth-year students (25.6%), first-year students (23.8%), and second-year students (23.3%). The majority of students had a monthly income of less than 2 million VND (57%), while a small number had an income of 5 million VND or more (4.7%).

4.2. Cronbach's Alpha reliability test

The scales were tested for reliability through Cronbach's alpha coefficient. The results of testing the reliability of the scale all meet the reliability requirements, the smallest Cronbach's alpha coefficient is 0.782 and the largest is 0.934, so the Cronbach's alpha coefficient of the 7 scales ranges from 0, 7-1 proves to be a good to very good scale. The total variable correlation coefficients are all greater than 0.3, so the scale meets standards, ensuring good quality. Cronbach's alpha coefficient states that, if all variables are smaller than Cronbach's alpha, the scale can be used. Therefore, all 28 observed variables can continue to be used for EFA exploratory factor analysis.

4.3. Exploratory Factor Analysis (EFA)

The results of EFA analysis for the group of independent variables affecting the intention to buy organic food in table 2.3 show that the test results of KM0 = 0.794 > 0.5 are achieved with Sig.Bartlett's Test = 0.000 < 0.5. Thus, the data is suitable for conducting factor analysis. The extracted variance reached 75,750% (>50%), indicating that the 6 extracted factors explain 75,750% of the variation in the data. With this result, the scale drawn meets the requirements. The stopping point when extracting factors is at factor 6 with Eigenvalues = 1.505.

Table 4.1. EFA Analysis Results of Independent Variables

Observed Variable	**Factor Loading Coefficient of Components**

	1	2	3	4	5	6
SN4	0,912					
SN2	0,904					
SN3	0,896					
SN1	0,875					
PQ4		0,916				
PQ3		0,915				
PQ1		0,880				
PQ2		0,850				
HC4			0,860			
HC2			0,857			
HC3			0,849			
HC1			0,827			
PP4				0,877		
PP2				0,854		
PP3				0,831		
PP1				0,817		
EC1					0,796	
EC3					0,794	
EC4					0,766	
EC2					0,719	
FSC3						0,832
FSC1						0,794
FSC2						0,780
KMO Test	0,794					
Bartlett's Test	0,000					
Eigenvalues	1.505					
% Variance	75.750					

Source: Results of the author's data analysis

The analysis results show that there is 1 factor extracted from the EFA analysis for the dependent variable Intention to consume organic food, this is consistent with the original theory and scale. The extracted variance reached 80.249% > 50%, Eigenvalues = 4.012 > 1, meeting the requirements. All observed variables have factor loading coefficients > 0.5 which is appropriate

(Table 2.4). KMO test in factor analysis for the dependent variable consumption intention has coefficient KMO = 0.794 and value Sig. Bartlett's Test = 0.000 < 0.05. This shows that the data is suitable for conducting regression analysis.

Table 4.2: Results of EFA Analysis of Dependent Variables

Observed Variable	**Factor Loading Coefficient**
Int5	0,930
Int4	0,923
Int2	0,888
Int1	0,879
Int3	0,857
KMO Test	0,788
Bartlett's Test	0,000
Eigenvalues	4,012
% Variance	80,249

Source: Author's data analysis results

4.3. Linear regression analysis

Pearson Correlation Analysis

The results of the Pearson correlation analysis are in Table 4.2. The factors in the model all have a fairly close linear relationship with the intention to consume organic food at the 1% significance level (2-sided test). The factors in the model achieved discriminant value, meaning that all scales in the research results measured different concepts and were included in the regression analysis.

Table 4.3. Pearson Correlation Analysis Results

	Int	EC	FSC	HC	SN	PQ	PP
Int	1						
EC	0.528**	1					
FSC	0,469**	0,184*	1				
HC	0,578**	0,326**	0,277**	1			
SN	0,384**	0,156*	0,207**	0,153*	1		
PQ	0,338**	0,044	0,235**	0,255**	-0,201**	1	

PP	0,290**	0,127	0,240**	0,213**	0,119	0,161*	1

*. Correlation is significant at the 5% level (2-tailed).
**. Correlation is significant at the 1% level (2-tailed).

Identify 6 factors that influence the intention to buy organic food, including Environmental Concern (EC), Food Safety (FSC), Health Consciousness (HC), Subjective Norms (SN), Product Quality (PQ) and Product Price (PP). Conducting multiple linear regression analysis with the dependent variable being Intention to consume organic food, the results are presented in Table 4.4.

Table 4.4. Results of Multiple Linear Regression Analysis

Model	**Unstandardized Coefficients**		**Standardized Coefficients**	**T-value**	**Sig.**	**Multicollinearity**	
	Bêta	**Std. Error**				**Tolerance**	**VIF**
Constant	-0,809	0,265		-3,053	0,003		
EC	0,366	0,054	0,330	6,753	0,000	0,874	1,144
FSC	0,170	0,046	0,188	3,728	0,000	0,820	1,220
HC	0,214	0,036	0,302	5,889	0,000	0,796	1,256
SN	0,191	0,032	0,292	5,913	0,000	0,857	1,166
PQ	0,195	0,038	0,260	5,176	0,000	0,832	1,202
PP	0,050	0,039	0,062	1,287	0,200	0,904	1,106

Adjusted R^2 = 0,642 F-value = 52,206 Significance Level (Sig) = 0,000

The results of linear regression analysis on the relationship between factors affecting the intention to consume organic food in Table 2.6 show that out of 6 influencing factors, 5 factors have a significant impact on organic food consumption. The intention to consume organic food is Environmental Concern, Food Safety Concern, Health Consciousness, Subjective Norm and Product Quality all have Sig values < 0.05. The remaining factor, product price, does not have a significant impact on the intention to consume organic food with Sig value = 0.200 > 0.05. Therefore, the accepted hypotheses are H1, H2, H3, H4 and H5. And hypothesis H6 is rejected.

Coefficient R2 = 0.809 and adjusted R2 = 0.642, concluding that the built multiple linear

regression model fits the data set at 64.2% - 64.2% of intention to consume organic food. explained by the 6 factors mentioned above. The model's variance exaggeration factor VIF has values ranging from 1.106 to 1.256, smaller than 2. The tolerance coefficient is low, so there are no signs of multicollinearity and no signs of multicollinearity. of multicollinearity and no strong correlation between independent variables.

The research will be based on the absolute value of the standardized regression coefficient to compare the importance of independent variables (impact level of independent variables). The larger the absolute value of the β coefficient, the greater the importance of that independent variable and that variable has a stronger impact on the dependent variable. Therefore, the research results show that the strongest impact belongs to "Concern for the environment" with a standardized beta coefficient = 0.330, followed by "Health awareness" with a standardized beta coefficient = 0.302, followed by “Subjective standards” with a standardized β coefficient = 0.292, “Product quality” with standardized β coefficient = 0.260 and finally “Concern for food safety” with standardized β coefficient chemistry = 0.188.

In conclusion, with the increasingly serious environmental pollution situation, consumers are becoming evermore aware of the importance of protecting their health and the environment. This has promoted the increasing demand for organic food. In addition, the increased awareness of the importance of a healthy and safe diet has prompted consumers to seek better food choices for themselves and their families. Therefore, education plays an important role in raising public awareness about the importance of organic food and environmental issues. Knowledge about organic agriculture and environmental protection should be included in the curriculum from primary to university level. Government increases communication about the benefits of organic food, the harmful effects of contaminated food, and how to choose safe food. However, young

people often have limited budgets, and organic food prices are often higher than conventional food. Young people may want to follow the trend. Therefore, it is necessary to organize events such as organic food fairs, cooking classes with organic ingredients to attract and secure students' attention.

5. Recommendation and conclusion.

The increasing interest in healthy and sustainable lifestyles among younger generations creates a potential market for organic food consumption. However, despite this growing awareness, several barriers hinder the adoption of organic food habits among today's youth. One significant obstacle is the relatively high cost of organic products compared to conventional food. This is primarily due to the stringent regulations and labour-intensive practices in organic farming, which lead to higher production costs. Additionally, there is often a lack of widespread understanding of the long-term benefits of organic foods for health and environmental sustainability, particularly in regions where organic education is limited. The accessibility and distribution of organic products also remain challenges, as organic foods are not yet widely available in all markets, especially in rural or less developed areas.

From a broader perspective, the promotion of organic food consumption is closely linked to several global sustainability frameworks, such as the Sustainable Development Goals (SDGs). Organic farming supports SDG 12 (Responsible Consumption and Production) by promoting sustainable agricultural practices, SDG 13 (Climate Action) through reduced greenhouse gas emissions, and SDG 3 (Good Health and Well-being) by minimizing exposure to harmful chemicals. Addressing the barriers to organic food consumption among young people is thus not only a matter of individual choice but also a critical component of global sustainability efforts.

a. Education Reform: Raising Awareness through Institutional Education

One of the most critical interventions the government can make to encourage organic food consumption among young people is through education reform. Incorporating organic farming, sustainability, and nutrition into the national education curriculum, from elementary schools to universities, is vital. By integrating these topics into subjects like environmental science, biology, and health education, schools can instill an understanding of the ecological and health benefits of organic products from an early age. University-level institutions can offer specialized courses or even degrees focusing on organic agriculture and sustainable food systems, ensuring that the next generation of consumers is informed and motivated to adopt healthier, more sustainable eating habits.

Moreover, universities and educational institutions can partner with local organic food producers to offer on-campus organic markets or create farm-to-table programs. These initiatives not only educate but also provide students with convenient access to organic foods, fostering habits of consumption.

b. Technological Innovation and Support for Organic Agriculture

Governments must actively support the research and development of innovative agricultural technologies that can increase the efficiency of organic farming. By investing in precision farming technologies, sustainable pest control methods, and improved organic fertilizers, governments can help organic farms reduce costs while maintaining or increasing productivity. This reduction in production costs can be passed down to consumers in the form of lower-priced organic products, making them more accessible to younger consumers who are often price-sensitive.

Moreover, the government could implement policies that provide subsidies or financial incentives to farmers who transition from conventional to organic farming. This support would encourage more farms to adopt organic practices, thereby increasing the supply of organic products and helping to stabilize prices in the long term.

c. Financial Incentives and Tax Relief for Businesses and Consumers

To make organic food more affordable and encourage widespread adoption, governments could offer financial incentives to both producers and consumers. For organic farmers and businesses, tax breaks or subsidies could help lower the cost of production, allowing them to reduce the price of organic goods. Additionally, offering low-interest loans or grants to small- and medium-sized organic producers would enable them to scale operations, improve distribution networks, and reach more markets.

For consumers, particularly young consumers, governments could introduce vouchers or discount programs, making organic products more accessible. Such programs could be targeted at students, providing them with financial incentives to purchase organic foods, thereby nurturing a lifelong habit of consuming healthier, more sustainable food.

d. Comprehensive Public Awareness Campaigns

Governments should collaborate with educational institutions, businesses, and non-governmental organizations (NGOs) to launch national campaigns that raise awareness about the benefits of organic food. These campaigns should utilize modern communication channels such as social media, influencers, and digital marketing platforms to reach younger audiences effectively. The messaging should emphasize the health benefits of organic food, its positive environmental

impact, and the role it plays in sustainable development.

Public campaigns could also include labeling initiatives that clearly distinguish organic products in the market, making it easier for consumers to identify and choose organic options. Certifications and logos from reputable authorities ensure transparency and build consumer trust, further driving the demand for organic food.

e. Developing Accessible Distribution Channels for Organic Food

Another critical area for policy intervention is the development of robust distribution networks that make organic food more widely accessible. Governments can work with private enterprises and cooperatives to establish organic food markets in urban areas, universities, and online platforms. E-commerce platforms, in particular, offer a convenient way for young consumers to access organic products, especially in regions where physical stores may not carry them.

Furthermore, governments can encourage the creation of organic cooperatives, where small producers can pool their resources to distribute organic products more efficiently and at lower costs. This would also promote local consumption of organic products, reducing transportation costs and carbon emissions, further aligning with sustainability goals.

References:

Abdul-Muhmin, A. G. (2007). Explaining consumers' willingness to be environmentally friendly. International Journal of Consumer Studies, 31(3), 237-247.

Agarwal, P. (2019). Theory of Reasoned Action and Organic Food Buying in India. Srusti Management Review, 11(2).

Ahmad, S. N. B., Omar, A. B., & Rose, R. B. (2015). Influence of personal values on generation Z's purchase intention for natural beauty products. Advance in Global Business Research, 12(1), 436-446.

Ajzen, I. (1991). The theory of planned behavior. Organizational behavior and human decision processes, 50(2), 179-211.

Arvanitoyannis, I. S., Krystallis, A., & Krystallis, A. (2004). Health and environmental consciousness: greek consumers' attitudes toward the organic, HACCP and ISO14000 certifications on food. Journal of International

Food & Agribusiness Marketing, 15(1-2), 93-136.
Bourn, D., & Prescott, J. (2002). A comparison of the nutritional value, sensory qualities, and food safety of organically and conventionally produced foods. Critical reviews in food science and nutrition, 42(1), 1-34.
Canavari, M., Centonze, R., & Nigro, G. (2007). Organic food marketing and distribution in the European Union.
Chu, K. M. (2018). Mediating influences of attitude on internal and external factors influencing consumers' intention to purchase organic foods in China. Sustainability, 10(12), 4690.
Crutchfield, S. R., & Roberts, T. (2000). Food safety efforts accelerate in the 1990's. Food Review/National Food Review, 23(3), 44-49.
Dinh Toan NGUYEN;Dinh Chien TRUONG. (2021). The Impact of Psychological and Environmental Factors on Consumers' Purchase Intention toward Organic Food: Evidence from Vietnam. The Journal of Asian Finance, Economics and Business (JAFEB), 8(1), 915-925.
Dũng, V. A., Hiền, N. T., & Ánh, N. T. N. (2012). Đánh giá nhận thức và hành vi tiêu dùng xanh: Trường hợp người tiêu dùng Hà Nội. Kinh tế & Phát triển, 184, 46-55.
Global Organic Food & Beverages Market to Reach USD 211.44 Billion by 2020. Retrieved May 30, 2024.
Hiền, N. N. (2021). Ý định mua và sẵn sàng trả giá cao của người tiêu dùng đối với thực phẩm hữu cơ: ứng dụng mô hình hồi quy Logistics. Journal of Science and Technology-IUH, 51(03).
Hoang, T. B. T., Hoang, L. K., Nguyen, T. U., & Nguyen, T. U. (2019). Factors Affect Green Food Consumption Intention of Consumers in Hanoi. VNU JOURNAL OF ECONOMICS AND BUSINESS, 35(3).
Honkanen, P., Verplanken, B., & Olsen, S. O. (2006). Ethical values and motives driving organic food choice. Journal of Consumer Behaviour: An International Research Review, 5(5), 420-430.
Jane Hay, The Consumer's Perspective on Organic Foods, Canadian Institute of Food Science and Technology Journal, Volume 22, Issue 2, 1989, Pages 95-99.
Krystallis, A., & Chryssohoidis, G. (2005). Consumers' willingness to pay for organic food: Factors that affect it and variation per organic product type. British food journal, 107(5), 320-343.
Kumar, S., & Ali, J. (2011, June). Analyzing the factors affecting consumer awareness on organic foods in India. In 21st Annual IFAMA World Forum and Symposium on the Road to 2050 (Vol. 2050, pp. 1-12).
Lee, K., Conklin, M., Cranage, D. A., & Lee, S. (2014). The role of perceived corporate social responsibility on providing healthful foods and nutrition information with health-consciousness as a moderator. International Journal of Hospitality Management, 37, 29-37.
McEachern, M. G., & Mcclean, P. (2002). Organic purchasing motivations and attitudes: are they ethical?. International journal of consumer studies, 26(2), 85-92.
Nam, N. K. (2015). Ý định tiêu dùng thực phẩm hữu cơ của người tiêu dùng trẻ: vai trò của niềm tin. Tạp chí khoa học và công nghệ Đại học Đà Nẵng, 8(93), 104-108.
Nguyên, N. T., & Trang, L. T. (2021). Yếu tố ảnh hưởng đến ý định mua thực phẩm hữu cơ của người tiêu dùng tại TP. HCM. TẠP CHÍ KHOA HỌC ĐẠI HỌC MỞ THÀNH PHỐ HỒ CHÍ MINH-KINH TẾ VÀ QUẢN TRỊ KINH DOANH, 16(1), 160-172.
Nguyễn, T. M. A., & Nguyễn, T. P. D. (2024). Các nhân tố ảnh hưởng đến ý định mua thực phẩm hữu cơ của người tiêu dùng trẻ Hà Nội. Tạp chí Kinh tế và Phát triển, (322), 92-100.
Olsen, M. C., Slotegraaf, R. J., & Chandukala, S. R. (2014). Green claims and message frames: How green new products change brand attitude. Journal of Marketing, 78(5), 119-137.
Organic Food Market Leading Segment over the Forecast period 2022–2030 from https://www.researchdive.com/346/organic-food-market
Rana, J., & Paul, J. (2017). Consumer behavior and purchase intention for organic food: A review and research agenda. Journal of retailing and consumer services, 38, 157-165.
Saleki, Z. S., & Seyedsaleki, S. M. (2012). The main factors influencing purchase behaviour of organic products in Malaysia. Interdisciplinary Journal of Contemporary Research in Business, 4(1), 98-116.
Secapramana, L. V. H., & Ang, L. G. K. (2019). Antecedents affecting organic food purchase intentions. International Journal of Organizational Innovation, 12(2), 140-150.
Shaharudin, M. R., Pani, J. J., Mansor, S. W., & Elias, S. J. (2010). Factors Affecting Purchase Intention of Organic Food in Malaysia's Kedah State/Facteurs Influant Sur L'intention D'achat D'aliments Biologiques Dans La Region De Kedah En Malaisie. Cross-cultural communication, 6(2), 105.
Švecová, J., & Odehnalová, P. (2019). The determinants of consumer behaviour of students from Brno when purchasing organic food. Review of Economic Perspectives, 19(1), 49-64.

Sweeney, J. C., Soutar, G. N., & Johnson, L. W. (1999). The role of perceived risk in the quality-value relationship: A study in a retail environment. Journal of retailing, 75(1), 77-105.
Teng, C. C., & Wang, Y. M. (2015). Decisional factors driving organic food consumption: Generation of consumer purchase intentions. British Food Journal, 117(3), 1066-1081.
The next environmental issue for business: McKinsey Global Survey results. (2010, August 1). McKinsey. Retrieved May 31, 2024, from https://www.mckinsey.com/capabilities/sustainability/our-insights/the-next-environ
Thomas, T., & Gunden, C. (2012). Investigating consumer attitudes toward food produced via three production systems: Conventional, sustainable and organic. J. Food Agric. Environ, 10(2), 55-58.
Thuy, L. T., Phuong Dio, T. T., Hoan, N. D., Ninh, V. V., & Thuy Nga, N. T. (2021). Factors affecting intention to purchase organic agriculture products among Vietnamese.
Thøgersen, J. (2016). Consumer decision-making with regard to organic food products. In Traditional food production and rural sustainable development (pp. 173-192). Routledge.
Vermeir, I., & Verbeke, W. (2008). Sustainable food consumption among young adults in Belgium: Theory of planned behaviour and the role of confidence and values. Ecological economics, 64(3), 542-553.
Việt, N. H., Khoa, N. B., Ninh, N. T., & Nguyệt, N. T. M. TIÊU DÙNG THỰC PHẨM HỮU CƠ: NGHIÊN CỨU TỪ THÁI ĐỘ ĐẾN HÀNH VI MUA THỊT HỮU CƠ CỦA NGƯỜI TIÊU DÙNG VIỆT NAM.
Voon, J. P., Ngui, K. S., & Agrawal, A. (2011). Determinants of willingness to purchase organic food: An exploratory study using structural equation modeling. International Food and Agribusiness Management Review, 14(2), 103-120.
Weinstein, D., & Farley, J. U. (1975). Market segmentation and parameter inequalities in a buyer behavior model. The Journal of Business, 48(4), 526-540.
Woteki, C. E., Facinoli, S. L., & Schor, D. (2001). Keep food safe to eat: healthful food must be safe as well as nutritious. The Journal of nutrition, 131(2), 502S-509S.
Xinh, H. T., & Xinh, H. T. Vận dụng lý thuyết hành vi dự định trong nghiên cứu quyết định hành vi đi du lịch của khách quốc tế tại Điểm đến Hội An.

A case study on sustainable tourism and its contributions to SDGs in Dien Bien Province, Viet Nam

Nguyen Duc Hoa Cuong

Hanoi University, Vietnam

Abstract:

The tourism industry in Dien Bien Province, Vietnam, has significantly expanded by promoting sustainable tourism through community-based tourism (CBT) since 2017. Dien Bien's natural resources, location, and proximity to Laos and China attract foreign tourists. By 2023, Dien Bien welcomed over one million visitors, a 25% increase from 2022 (Resources and Environment Newspaper, 2023). The province's tourism strategy aligns with the United Nations' Sustainable Development Goals (SDGs), emphasizing economic growth, environmental conservation, and cultural preservation.

This study assesses the province's tourism practices using qualitative methods, including in-depth interviews and content analysis of secondary data. Key SDGs such as SDG 8 (Decent Work), SDG 12 (Responsible Consumption), and SDG 15 (Life on Land) are central to evaluating Dien Bien's sustainable tourism initiatives. The involvement of local communities and collaborative governance is essential for tourism management, with a focus on ecotourism, cultural heritage, and environmental sustainability.

However, challenges such as limited infrastructure, funding, and environmental pollution persist. Dien Bien has implemented initiatives like waste treatment plants, renewable energy projects, and forest conservation to address these issues. The province also fosters cultural

Contact Nguyen Duc Hoa Cuong: Email cuongndh@hanu.edu.vn; Tel +84.0912120860

preservation and cross-cultural understanding, enhancing its tourism appeal and contributing to local socio-economic development. Despite obstacles, the case of Dien Bien highlights the potential for sustainable tourism to drive regional growth while preserving natural and cultural heritage.

Keywords: sustainable tourism development, sustainable development goals (SDGs), Dien Bien Province, Viet Nam, qualitative research.

I. Introduction

A. Background of the studied destination

The tourism industry, despite being a non-smoke industry, has a significant impact on natural resources and the economic-social sector (Postma & Schmuecker, 2017). Vietnam, a rising destination in South East Asia, is promoting sustainable tourism by implementing the concept of community-based tourism (CBT) in 2017 (Thu, 2023). The Law on Tourism in 2017 introduced the concept of sustainable tourism as "tourism development that simultaneously meets socio-economic and environmental requirements, ensuring harmony of interests of entities participating in tourism activities, without harming the ability to meet future tourism needs" (Thuvienphapluat.net, 2017). Dien Bien, Vietnam's westernmost point, offers numerous advantages such as ecotourism, cultural tourism, historical tourism, and border tourism (Le, 2019; Chau, 2023). With a total area of 9,541.25 km2, Dien Bien is one of the top ten largest provinces in Vietnam, with over 20 ethnic groups and a diverse culture, language, activities, and beliefs (Tu, 2019; Dien Bien TV, 2014; Dien Bien Portal, 2017).

The province's moderate temperatures and condensed river and stream network enable it to develop natural eco-tourism, including famous sites like Pa Khoang Lake, Muong Nhe nature

reserve, and Muong Phang forest. It also has two borders with Laos and China, providing an opportunity to attract more foreign tourists. In 2023, Dien Bien welcomed over 454,000 visitors, an increase of more than 5.2 times compared to 2022, with international visitors alone increasing more than 24 times (Van & Ngoc, 2023).

The Dien Bien Provincial Department of Culture, Sports, and Tourism (DCST of Dien Bien province in short) has been working on implementing and spreading sustainable tourism since 2003. On May 7, 2021, the Dien Bien Provincial Party Committee issued Resolution No. 03-NQ/TU on tourism development in Dien Bien province to 2025, promising to draw attention from both domestic and international friends to the province (DCST of Dien Bien province, n.d; Ha, 2023).

B. Objectives of the case study

This case study evaluates the good practices and limitations of the province using the Sustainable Development Goals (SDGs) set by the United Nations in 2015, including seven SDGs: SDG 1 (No Poverty), SDG 8 (Decent Work and Economic Growth), SDG 11 (Sustainable Cities and Communities), SDG 12 (Responsible Consumption and Production), SDG 13 (Climate Action), SDG 15 (Life On Land), SDG 16 (Peace, Justice and Strong Institutions).

II. Methodology

The research approach involves qualitative methods, including one-on-one in-depth interviews with participants and secondary data from other relevant sources. The author selected seven SDGs related to Dien Bien and conducted a search for secondary information to provide a comprehensive overview of the local situation. In-depth interviews were conducted with eight

participants, including local people, business owners, and authorities, who all have knowledge and experiences related to tourism.

The in-depth interviews began with open-ended questions to gather personal background information about the interviewees. The structure of the subsequent interview sections was based on the selected SDGs, with questions divided into each SDG, on average 5 to 6 questions for each SDG. This method allowed for the collection of macro and broad information as well as interesting and practical stories.

Stakeholders involved in the study include three main departments: the Head and Deputy Head of the Ethnic Department of Tua Chua district, the Inspector of the Ethnic Committee of Dien Bien Province, the Women's Union of Dien Bien Province, and the DCST of Dien Bien province. These participants hold positions at local tourism organizations and provide reliable and diverse information.

Business owners operating in the tourism industry in the province have a realistic perspective and abundant experiences, providing valuable insights into the effectiveness of local development plans and strategies. Finally, local people, such as the Interviewee P7 and a team member (the Interviewee P8) of the Hoa Ban Trang performing group (Tua Chua District), were interviewed for multi-dimensional perspectives.

III. Context of Sustainable Tourism Development

Dien Bien province, a borderland rich in potential and diverse tourism resources, has made efforts to develop various tourism products such as cultural tourism, revolutionary and resistance history, CBT, and festival tourism. The province's tourism development program for 2020 and its vision to 2030 aims to transform Dien Bien into a major tourism hub by 2020 by

investing in historical, cultural, ecological, resort, and community tourism (Sam, 2016).

The tourism industry in Dien Bien has consistently shown growth, with the number of tourists increasing each year. This has brought revenue to the province's budget and increased retail sales of goods and services (VOV, 2023). DOCST of Dien Bien province (n.d.) has focused on developing community-based and agricultural tourism in cultural villages and raising local villagers' awareness of the relationship between tourism development and socio-economic development.

However, there are still challenges faced by the tourism sector, such as not drawing in large financial backers and unfamiliar financial backers into vacationer regions and locations. National defense and security issues, land planning and limited land funds, traffic issues, undeveloped aviation infrastructure, and high prices are some of the reasons why the region's tourism industry framework has not been created. Training and fostering to improve the quality of human resources have also received special attention. The local Government authority has organized tourism vocational skills training and fostering for dynamic laborers, but the quality is still not high and not proficient in helping style. Travel agencies are not working, and people's mindfulness is crucial for ensuring the respectability of scenes and landmarks (Nguyet, 2019).

Infrastructure is another concern, with the province having 120 tourist accommodation establishments in 2015, one 4-star standard hotel, and two 3-star standard hotels. These facilities, infrastructure, and travel businesses do not meet the needs of socialized tourism, especially long-term tourists. Additionally, the tourism products are poor and rudimentary, resulting in a lack of scale and competitiveness compared to other regions in the country (Sam, 2016).

In conclusion, Dien Bien province faces several challenges in its tourism development, including inadequate funding, lack of infrastructure, and a lack of modern facilities and equipment.

IV. Local Good Practices in Sustainable Tourism

A. Sustainable Destination Management

1. Collaborative governance and stakeholder involvement

The DCST of Dien Bien province emphasizes the importance of collaborative governance and stakeholder involvement in sustainable destination management. This involves diverse stakeholders, including government bodies, local communities, businesses, and NGOs, actively participating in decision-making processes to create a shared vision for sustainable development. This approach promotes transparency, accountability, and innovative solutions, building trust and mutual understanding among stakeholders.

Dien Bien Province recognizes the need for inclusive decision-making, incorporating the voices of all relevant stakeholders in tourism policy formulation. Through forums, workshops, and regular consultations, the province ensures that local communities, businesses, and cultural representatives are considered in tourism policies and strategies. The DCST's strategy on "Developing CBT in a sustainable way" emphasizes the need for diversification of service offerings, such as engaging in agricultural production/cultivation and exploring landscapes, people, cultures, and lifestyles of the locals (DCST of Dien Bien province, n.d.).

Collaborative governance provides a structured framework for addressing conflicts and finding mutually agreeable solutions. Trust fosters a cooperative environment, encouraging ongoing collaboration and commitment to the shared goals of sustainable tourism.

2. Long-term planning and management strategies

Long-term planning and strategic management are vital components of sustainable tourism in Dien Bien. Comprehensive destination planning integrates environmental impact

assessments, infrastructure development, and capacity-building initiatives. Effective management strategies involve continuous monitoring, evaluation, and adaptive planning, aligning tourism development with the province's long-term sustainability goals.

The DCST of Dien Bien province (2020) has developed a draft TCVN "CBT - service quality requirements" to outline long-term strategies for tourism development in the province. These strategies include developing visionary long-term plans that align with broader economic, social, and environmental goals, ensuring that tourism activities contribute positively to the province's overall development.

The long-term strategies also involve the development of sustainable infrastructure, which includes considerations for transportation, waste management, water resources, and energy efficiency to create a resilient and sustainable tourism ecosystem. This has resulted in significant development in infrastructure and services, creating favorable conditions for visitors and contributing to the economic and social development of Dien Bien. For example, Tien Phong village is one of two villages selected by Muong Bang commune (Tua Chua district) to develop a community-based tourism model. Local people unanimously contributed to completing the concrete road within the village to replace the rough dirt and rock roads. Families in the village have actively prepared facilities, refurbished houses, sanitation facilities, cleaned the landscape and environment to meet standards and prepared food for on-site supply (Khai, 2022). Furthermore, public amenities and transportation have also been upgraded. Roads and public transportation systems have been improved for convenient travel within the region and from neighboring areas. Infrastructure facilities such as bridges, roads, and electricity have been invested in to ensure comfort and safety for tourists. According to the Interviewee P5, “The state has provided electricity to every village so that there are no more power outages. Electricity has gone to schools, homes,

and accommodation establishments to serve tourists".

3. Community engagement and local empowerment

Community engagement and local empowerment are keystones in ensuring the sustainability of tourism in Dien Bien. Local communities play a central role in decision-making processes, allowing them to actively participate in shaping their tourism landscape. Empowering local communities involves creating opportunities for them to benefit economically from tourism, fostering a sense of ownership and pride. This can be achieved through initiatives like CBT, skill development programs, and revenue-sharing mechanisms.

DCST of Dien Bien province compiled a strategy on "Developing CBT in a sustainable way" to explain some recommendations for developing CBT to alleviate poverty in a sustainable way. The authority stated that empowering the community involves exercising the right to control and manage natural resources. For example, women in Tua Chua District are empowered by tourism through giving opportunities to become a workforce and do business. Highlights include souvenirs and handicraft products made with elaborate and skillful embroidery activities by ethnic minority women, especially Mong, Xa Phang,...women (Nam Po District's People Committee, 2023; Personal communication with the Interviewee P1).

In conclusion, sustainable destination management in Dien Bien Province relies on a holistic approach that includes collaborative governance, long-term planning, and community engagement. By embracing these principles, Dien Bien can create a thriving tourism industry that preserves its cultural and natural heritage for future generations while benefiting local communities economically and socially.

B. Environmental Sustainability

1. Conservation and protection of natural resources

The Resources and Environment Newspaper (2022) highlights the importance of conservation and protection of natural resources in Dien Bien Province, a province with rich biodiversity and unique species. Robust conservation strategies involve establishing protected areas, reforestation projects, and promoting sustainable agriculture practices. Balancing economic development with environmental preservation is crucial, and Dien Bien Province's commitment to resource conservation forms the foundation for a resilient and ecologically sound future.

CBT in Dien Bien follows SDG 15 "Life on land," emphasizing the importance of CBT associated with ecotourism and green tourism. To develop CBT in a sustainable direction, the province invests in developing CBT infrastructure associated with preserving natural resource values and promoting traditional cultural values of ethnic groups.

Community tours in Dien Bien district promote awareness of forest protection among people and tourists, while the payment for forest environmental services attracts a large force of forest management and protection among the people, especially in remote and difficult areas. This provides a stable source of income, contributing to improving and enhancing people's lives. According to the Interviewee P1 (Tua Chua district), during community tours, foreign tourists will be propagated and educated about protecting forests and animal habitats. Tua Chua district is also assessed to have great potential in community-based ecotourism toward sustainable development. The Interviewee P7 (Tua Chua district), also said that sometimes tourists will ask to buy forest products, but thanks to propaganda from authorities at all levels, people refuse to provide wild specialties in the forest, especially the species included in the ban.

Currently, the payment for forest environmental services has attracted a large force of

forest management and protection among the people, especially in remote and extremely difficult areas, to directly participate in forest protection. This is also a stable source of income, contributing to improving and enhancing people's lives. The Interviewee P9 (Tua Chua District) said: “Thanks to the good implementation of the Payment for Forest Environmental Services (PFES) policy, it has had a strong impact on forest management and protection in the district”. People enjoy the State's policies and regimes, which uphold their responsibility to manage and protect forests (Resources and Environment Newspaper 2022). The Interviewee P7 stated that money collected from this payment policy helps people cover a lot of expenses, and since then the deforestation situation has also somewhat reduced.

2. Energy efficiency and renewable energy initiatives

Energy efficiency and renewable energy initiatives play a pivotal role in advancing environmental sustainability in Dien Bien Province. Implementing energy-efficient technologies such as LED lighting and energy-efficient appliances reduces the ecological footprint and contributes to a cleaner energy landscape. The province's commitment to sustainable energy is evident in its initiatives to harness abundant natural resources for power generation, mitigating the environmental impact and paving the way for a more resilient and self-sufficient energy infrastructure.

The Central budget supports tasks such as strengthening education, propagating and disseminating information, mobilizing the community to raise awareness, promoting economical and efficient use of energy, and building a school lighting model. The local government also implements the Program on economical and efficient use of energy by supporting establishments and businesses to participate in fairs, seminars, and exhibitions on energy saving

(Thuvienphapluat.vn, 2021).

The Department of Sustainable Development (DCST) of Dien Bien province is focusing on increasing solar battery power and wind electricity to save energy for tourism and reduce the negative effects of climate change. A household in Thanh Binh ward invested over 600 million VND in a solar power system with a capacity of 46 kWh, which saves the family's spending on monthly power bills and sells extra electricity to the electricity business via two-way electricity meters for delivery and reception.

3. Tourism promotes responsible consumption

Tourism in Dien Bien province promotes responsible consumption and environmental friendliness. Tua Chua district has been known as one of the first districts in the province to encourage sustainable practices among locals. Ecotourism destinations such as Pha Din in Tuan Giao district, Tang Quai Bay in Muong Ang district, and various garden house tourist attractions in Thanh Luong, Thanh Hung, Thanh Nua communes, and Dien Bien district have been established to promote environmental friendliness and reconnect people with nature (Chu & Huy, 2023).

Community-based tourism in Na Su village encourages responsible consumerism by using locally available materials and creating secure, environmentally sustainable campuses. Homestay Muong Then is recognized as a homestay founded on community-based tourism with the goal of "going green." Brocade weaving products, made from cotton and flax fibers taken from the forest, dark-dyed hemp, weaving patterns, and threads dyed with natural dyes, reflect the cultural identity of the local ethnic people and are eco-friendly products. The interviewee P1 said that products used as souvenirs for tourists are environmentally friendly products such as honey, brocade goods, wine…

Research by Nguyen & Nguyen (2021) shows that tourism brings social benefits and social costs to ethnic minorities in Dien Bien province. However, the level of impact of tourism on capital sources such as natural capital, human capital, physical capital, and financial capital is still at a moderate level. The most obvious impact is that tourism increases income for ethnic minorities but also creates water pollution, waste, and increased commodity prices.

4. Waste reduction and recycling programs

Dien Bien province, a developing area in Vietnam, faces significant environmental challenges due to its tourism industry. Over 389 tons of household solid trash are generated daily, with urban and rural areas producing over 85 tons and 304 tons respectively. Tourism has also negatively impacted agriculture, with the U Va tourism area causing flooding and crop loss (Song., 2021). To address these issues, the Interviewee P6 stated that since August 2019, the waste treatment plant in Pung Min commune, Pom Lot district, has been completed and put into operation, which has a capacity of 96 tons per day.

The Department of Natural Resources and Environment collaborates with the People's Committees of Tua Chua district to raise awareness and promote environmental hygiene preservation. Waste recycling measures are strictly prohibited, especially in rivers and streams. However, there is still a lack of waste reduction programs incorporating waste recycling measures due to limited funding and a lack of community participation.

5. Tourism can promote awareness of climate issues and support sustainable practices

Climate change has also significantly impacted the livelihoods of local people in Dien Bien, with extreme weather phenomena like hail, landslides, flash floods, soil erosion, and drought

increasing in frequency and intensity. To address this, Dien Bien has implemented policies and documents on biodiversity conservation, such as Decision No. 593 approving the detailed planning project of Muong Nhe Nature Reserve and Decision No. 837 on the establishment of the Management Board of Muong Phang Historical Relics Forest and Environmental Landscape. The Provincial Forest Protection and Development Fund implemented the Forest Environmental Services Payment Policy for almost 160,000 hectares of forest land, covering more than half of the total. Along with that, to ensure sustainable development, response, and adaptation to climate change as well as prioritize the use of renewable energy and clean energy for urban use, the rules for ground level and drainage are set (Tuan, 2018).

Deforestation for agricultural purposes remains a major issue in the province, and government agencies have increased propaganda efforts to raise people's awareness and knowledge about climate change prevention through various means (Xuan, 2022). According to the interviewee P1 (Tua Chua district), Dien Bien has not yet developed strongly in terms of industrial operations and tourism activities. However, with a vision up to 2050, tourism may impact the environment, and the province has attached forecasts and solutions for sustainable development.

C. Socio-cultural Impact

Dien Bien, nestled in the Northwestern region of Vietnam, boasts a rich socio-cultural tapestry that is deeply intertwined with its historical significance and ethnic diversity. The province has undertaken commendable efforts to preserve its cultural heritage and traditions, fostering a sense of identity and pride among its residents.

1. Preservation of cultural heritage and traditions

The preservation of traditional rituals, festivals, and crafts reflects a commitment to maintaining the authenticity of the local culture. Initiatives to document and showcase traditional practices contribute to the province's cultural richness and attract visitors seeking an immersive experience. Following SDG 16 about Peace, justice, and strong institutions, tourism in Dien Bien province helps to foster cultural understanding and promote peaceful relations with other provinces in Vietnam and foreign countries. Dien Bien has a community of 19 ethnic groups with different cultural treasures, which is a valuable resource for developing cultural tourism. The interviewee P1 stated that CBT has contributed to preserving weaving, brocade painting, traditional blacksmithing, culinary arts, and traditional festivals of the ethnic minorities.

The province has also examined and developed records of cultural heritages, including the heritage "Then practices of the Tay, Nung, and Thai people in Vietnam" recognized by UNESCO as an intangible cultural heritage of humanity. Dien Bien and Northern Laos provinces are strengthening connections to explore the tourism potential of both sides. In recent years, Dien Bien has coordinated with Northern Laos provinces to maintain cooperative relationships in the fields of tourism and culture, strengthen cooperation in promoting information, images, and product consumption in each side's market, support cooperation between businesses, promote production, export products, improve transportation quality, and participate in activities, events, and cultural and tourism festivals to promote exchange and cooperation (Hang, 2022).

In particular, Dien Bien has proposed solutions to preserve the traditional costume-making profession of the White Thai ethnic group, such as honoring and encouraging artisans and local people to participate in vocational training, organizing a vocational training class to make traditional costumes for the Thai ethnic group, creating opportunities for Thai people to participate in events, programs, and competitions, and bringing the products of the traditional Thai costume

making profession into a souvenir product sold at Na Su cultural village and tourist attractions (Nam Po District's People Committee, 2023).

In conclusion, Dien Bien has taken effective measures to develop sustainable tourism and preserve and popularize local culture. However, introducing cultures and traditions into tourism activities can have risks of exploiting and turning local culture into a commodity for tourism. It is essential for the government, tourism companies, and local people to be aware and take measures to prevent this bad practice from happening.

2. Promotion of authentic and responsible cultural experiences

Tourism in Dien Bien focuses on providing authentic and responsible cultural experiences, fostering cross-cultural understanding and appreciation. The Tourism Promotion Information Center (DCST) has proposed solutions to develop CBT for tourism activities in Dien Bien province, including developing policies related to conservation and sustainable development, organizing folk games, and educating the local community to build and preserve traditional lifestyles and cultural identities. Dien Bien has 11 cultural villages that serve tourists by exchanging cuisine, culture, and arts, producing traditional brocade goods, and offering homestays to meet living needs and experience ethnic cultural features. The province also takes action of propaganda, dissemination, and promotion of its cultural heritage values, building unique local tourism products, and publishing bilingual documents (Nguyen, 2021).

The Dien Bien Phu victory relic complex is a potential attraction for tourism development in Dien Bien, providing tourists with culture, history, military science, ethnology, anthropology, patriotism, revolutionary traditions, and personality development for Vietnamese descendants. After many years, from a bloody battlefield filled with bombs and bullets, today Dien Bien Phu

has become a destination of peace, friendship, and cooperation (Duy & Thanh, 2012).

3. Empowerment of local communities through tourism

CBT has the transformative power to empower local communities, transcending mere economic gains to influence social and cultural dimensions positively. The DCST of Dien Bien province compiled "Developing CBT in a sustainable way" and highlighted recommendations for localities to consider in the tourism development community that contributes to poverty eradication in a sustainable way.

Cultural preservation and exchange are pivotal dimensions of community empowerment through tourism. Through cultural exchanges, residents share traditional practices, rituals, and festivities with tourists, safeguarding cultural identity and fostering cross-cultural understanding. Environmental stewardship is intrinsic to community empowerment through tourism, as the community becomes actively involved in preserving natural resources and protecting the environment.

In conclusion, the empowerment of local communities through tourism in Dien Bien epitomizes a shift towards sustainable and inclusive development. By embracing economic, cultural, and environmental dimensions, tourism becomes a tool for positive transformation, fostering not just economic prosperity but a sustainable and enriched way of life for the people of Dien Bien.

D. Economic Benefits

Table 1. Dien Bien provincial tourism performance indicators

No.	Key indicators	Unit	2023	2024
1	Total number of tourist arrivals	'000 arrival	1,000	1,850
	In which, number of international tourists	'000 arrival	8,8	11.5

2	Tourism revenue	Billion VND	1,750	3,300
3	Average length of stay	Day	2.6	3.0
4	Share in provincial GRDP	%	-	10

Source: Hung (2023); Nhung (2024)

As one of the leading industries in Dien Bien, the development of tourism has led to the growth of many related economic sectors such as hospitality, retail and transportation and at the same time attracted local households to provide tourism services. Tourism development was claimed by Dich (2022) to contribute to a shift in economic and labor structure. Statistics released in 2021 demonstrated that Dien Bien is having 215 tourist accommodation establishments with 2,954 rooms/5,139 beds (both increases by 25% compared to 2019), 4 homestays, 11 cultural villages capable of welcoming and serving tourists, 16 entertainment and recreation venues which can serve 83,000 visitors at the same time. There are over 120 restaurants, some restaurants such as Lau Then quan restaurant does not only serve food but also affiliate with cultural villages (Pom Loi, Phieng Loi, etc.) to form a folk music team to serve their guests (Nguyen, 2022).

According to DCST of Dien Bien province, in 2024, the revenue from tourism activities also saw an increase of 88%, being estimated at over 3,300 billion VND resulted in 10% share in the provincial GRDP. The total number of tourists coming to Dien Bien achieved 1,85 million arrivals (85% higher than the same period in 2023) (Nhung, 2024).

Apart from the hospitality sector, tourism has contributed to the development of transportation in Dien Bien that Bamboo Airways did launch 2 direct flight routes: Ha Noi - Dien Bien and Ho Chi Minh - Dien Bien (Pham, 2021). Moreover, the construction project to expand Dien Bien Airport has been carried out by Airports Corporation of Vietnam (ACV). The renovation aims at meeting the operation requirements of A320, A321, and equivalent aircraft and working at the full capacity of 500,000 passengers/year (Phan, 2022). The project will create momentum for the Dien Bien economy and increase the local budget revenue in 2025 by at least 170 billion VND.

The average income per capita is also expected to have a rise of 4,611,600 VND in 2025. With the completion plan of Dien Bien airport, 8,000 workers could have opportunities to have direct jobs after 2025.

Regarding the retail sector, it also stimulates steady growth. Based on the statistics of the Department of Statistics of Dien Bien province (2023), the total retail sales and consumer service revenue in July 2023 are estimated to grow by 0.67% and 35% respectively compared to the previous month and by 85% over the same period of 2022.

The DCST of Dien Bien province (n.d) has always put an emphasis on developing CBT and agricultural tourism in cultural villages and raised the local villagers' awareness of relationships between tourism development and socio-economic development. Many households have proactively participated in tourism activities such as renovating their houses, restoring traditional crafts, practicing to communicate and serve tourist. The interviewee P8 said:

> "Thanks to the unique advantages of the village and the friendliness and hospitality of the people here, more and more tourists come to visit, learn about, and order food, cultural exchanges, and cuisine in the village. On crowded days, my family serves meals for 5-7 groups, on days when there are few, a few groups and more during the tourist season. The number of visitors is quite stable. My family business creates jobs for more than 30 people in the village from cooking, welcoming guests, and exchanging food, culture and art with guests".

According to Song et al. (2022), Dien Bien Phu City, Dien Bien district, Muong Nhe district, Vietnam, where the number of farming households having tourism-related livelihoods including both direct and indirect activities, accounts for about 40% and is uneven among districts in the province. Tourism has a positive impact on the income of farmers, as reflected by 39.39%

of total households with increased income through tourism, and 65.43% of households considering tourism as a stable income source. Most of the tourism business households have incomes ranging from 5 to 10 million VND/month and from 10 to 15 million VND/month. The interviewee P5 also commented that because CBT in the locality has just developed and is seasonal, people are not equipped with the knowledge to do translation services, not being able to maintain ethnic festivals, not being able to attract tourists, leading to an unstable source of income from tourism.

Other interviewees P3, P4 said that in general, the province's tourism has improved, and focused on development to support the goal of poor alleviation and poverty reduction. However, the contribution of tourism is limited, although these contributions are considered positive. The interviewee P7 said that since tourism development, income has also improved with more jobs out of farming. Money earned is often used to build houses and buy household appliances.

According to Nam Po District's People Committee (2023), Na Su village has piloted the OCOP product development along with a tourism model. Since Shan Tuyet Tua Chua tea was recognized as an OCOP product, many tourists coming to Tua Chua want to visit and experience the ancient tea forest. receive. The Commune People's Committee has developed a Community Tourism Development Project for the period 2020-2025, with a vision to 2030. The commune selected a number of households as homestay sites for tourists and established a cultural performance team to serve the cultural enjoyment needs of tourists (Dien Bien TV, 2022).

Following the SDG 8 about Decent Work, Community-Based Tourism (CBT) in Dien Bien Province goes beyond the traditional tourism model by prioritizing fair wages and fostering conducive working conditions for those engaged in the tourism sector. The retail industry has been experiencing the active participation of women throughout making and selling embroidery. According to the Interviewee P1 and the Interviewee P2 (Tua Chua district):

> “Thanks to tourism activities, women are participating more in tourism activities. Highlights include souvenirs and handicraft products made with elaborate and skillful embroidery activities by ethnic minority women, especially Mong and Xa Phang ones...Thereby, it can be confirmed that women are actively participating in the workforce in the tourism industry.”

The Interviewee P7 from Tua Chua district approved that local women participate in a lot of tourism-related activities as well.

> “Apart from making handicrafts, women are masters at performing folk arts and music to attract both domestic and international tourists, women are the main performers over men. Normally, there are around 10 - 40 people in a folk music team. When there are tourists coming to the village, all folk music and arts team members will perform free performances imbued with their traditional ethnic culture.”

When being asked whether free performances can help local women generate income, the Interviewee P7 shared that the revenue will come from selling handicraft souvenirs besides performances.

> “The main purpose of folk performances is to preserve the cultural values of the locals and appeal to visitors and attract more of them to come to the villages and enjoy the shows. The performances are free but when tourists love and appreciate them, they always purchase some craft and weaving items from the locals. Then, souvenirs and agricultural products made by the villagers are sold better and more effectively.”

Totally there are 1,038 similar mass performance teams in villages and residential groups across Dien Bien province according to statistics from the DCST of Dien Bien province (Van & Ngoc, 2023). Each team per village or residential group receives a supporting allowance of 4,000,000

VND periodically once a year.

Besides monetary support, the local government also enforces regulations on maximizing socio-economic benefits and working conditions for local communities. The set of regulations on the distribution of economic benefits from tourism were made in the Proposal of TCVN on CBT (DCST of Dien Bien province, 2020).

As a result, tourism development has proved to be giving a good performance in achieving the goal of “providing decent work” of SDG 8. The relevance of decent work in tourism was claimed by Winchenbach et. al. (2019) to relate to opportunities for not only grown men but also women, migrants, and young people.

V. Impact Evaluation and Lessons Learned

The impact of local practices in sustainable tourism on Sustainable Development Goals (SDGs) is evident in the sustainable destination management of Dien Bien. The involvement of collaborative governance and stakeholder involvement has a direct impact on sustainability goals, promoting transparency, accountability, and shared responsibility for sustainable tourism. Long-term planning and management strategies have indirect impacts on the goals, with visionary planning and sustainable infrastructure development contributing to long-term sustainability.

Dien Bien has also contributed to environmental sustainability through investments from the government, PFES, and CBT initiatives, as well as the involvement of local communities in forest protection. This contributes to SDG 15 "Life on Land" and SDG 11 "Responsible Consumption and Production." Additionally, waste reduction and recycling initiatives contribute to SDG 12 "Responsible Consumption and Production."

The socio-cultural field of Dien Bien tourism is significant, as it promotes cultural

understanding and peaceful relations, supporting SDG 16 and raising ethnic minorities' awareness of appreciating and proud of their cultures. Historical tourism in Dien Bien Phu battlefield can enhance Vietnamese descendants' patriotism and tourists' knowledge about the heroic period of Vietnam.

The practices of Dien Bien in developing tourism directly affect the economy and job opportunities, which are related to SDG 1 and SDG 8. Tourism in Dien Bien creates jobs in various fields, enabling local communities to earn their living and achieve higher living standards.

However, challenges and obstacles faced during implementation include resistance from stakeholders, difficulty in balancing interests, and external factors such as global economic shifts, geopolitical events, or natural disasters. There is also a lack of effective programs to protect the environment in tourism due to the lack of monitoring and funding. Furthermore, the ineffectiveness of propaganda and education leads to the local community having little awareness of preserving the environment and not being willing to participate actively in the programs.

Key lessons learned and best practices for other destinations include focusing on essential and suitable fields to promote sustainable tourism, having a backup plan, managing funds wisely, and raising public awareness about the importance of sustainable tourism and environmental protection.

VI. Conclusions and recommendations

This study, based on the United Nations' SDGs, provides a comprehensive analysis of sustainable tourism in Dien Bien Province. It highlights four main points: destination management, environmental sustainability, socio-cultural impact, and economic benefits of tourism. The research emphasizes the importance of collaborative governance, stakeholder involvement, strong

long-term planning, and community engagement and local empowerment in sustainable destination management.

Dien Bien Province's commitment to sustainable tourism and environmental protection is evident in various programs and stakeholder participation. The government's investment in PFES and CBT programs has resulted in the preservation of ecosystems and biodiversity, contributing to SDG 15 "Life on Land." The province's policies, along with awareness programs and training, have significantly changed public attitudes towards forest conservation, highlighting the need for collaborative governance and stakeholder participation in environmental sustainability.

The province promotes ethnic minority culture, create cultural heritage records, and increase cultural understanding support SDG 16. The growth of historical tourism at the Dien Bien Phu battlefield boosts patriotism and Vietnam's glorious history. The employment rate in various industries is enhanced, aligning with SDGs 1 and 8.

However, there are still challenges to overcome. To achieve long-term sustainability in tourism, the roles of the government, stakeholders, and people must be clearly defined. Local people with knowledge and clarity about their place of residence can make significant contributions, while experts in this field can provide valuable insights and resources. Diversification of tourism should be encouraged to develop resilience strategies to mitigate external factors.

Lastly, regular educational campaigns should focus on both local people and tourists, ensuring that people understand their value in the development of sustainable tourism. By implementing these recommendations, Dien Bien Province can strive towards overcoming its challenges and achieving long-term sustainability in tourism.

References:

Chau, T. A. (2023, May 5). Điện Biên inheriting advantages and potentials for sustainable development. People's Army Newspaper. https://www.qdnd.vn/du-lich/diem-den/dien-bien-ke-thua-loi-the-tiem-nang-de-phat-trien-ben-vung-727147

Chu, L., & Huy, L. (2023). Điện Biên develops green tourism. Dien Bien Radio and Television Station. https://dienbientv.vn/du-lich/201807/dien-bien-phat-trien-du-lich-xanh-5590704

Cultural and Information Department of Nam Po District. (2023). Plan for organizing cultural tourism space in Na Su Village [Google Docs]. https://drive.google.com/file/d/1WaoonwxxFkocAD0eGdXcVqi-PHsyO-cO/view?usp=drive_link

DCST of Dien Bien Province. (2020). Draft TCVN community tourism [Google Docs]. https://drive.google.com/file/d/1SsQV8FhKfWKouel6YvkBrU_qbHmLVusB/view?usp=drive_link

DCST of Dien Bien Province. (2023). Phuong Duc homestay develops community tourism associated with preserving traditional national culture. Dien Bien Provincial Portal. [invalid URL removed]

DCST of Dien Bien Province. (n.d.-a). Community tourism program associated with agricultural tourism in Men Village [Google Docs]. https://drive.google.com/file/d/19fB6-zAtqzLRBXHWBacIdtaUOH6IHGRD/view?usp=drive_link

DCST of Dien Bien Province. (n.d.-b). Developing community tourism towards sustainability [Google Docs]. https://drive.google.com/file/d/1KWct-jZqZBpPF9SYC6r7SCQpGZ0w0bUp/view?usp=drive_link

DCST of Dien Bien Province. (n.d.-c). Tourism program in Phieng Loi Village [Google Docs]. https://drive.google.com/file/d/1QHJ0nzGveG_LxWLCdn0Bm3fCvATtoGXH/view?usp=drive_link

Department of Statistics of Dien Bien Province. (2023, August 31). Socio-economic situation of Dien Bien Province in August and the first 8 months of 2023. Dien Bien Provincial Statistics Office. https://thongkedienbien.gov.vn/thong-tin-kinh-te-xa-hoi/tinh-hinh-kinh-te-xa-hoi-tinh-dien-bien-thang-8-va-8-thang-dau-nam-2023-457.html

Dich, P. (2022). Planning of Dien Bien Province for the period 2021–2030, vision to 2050: 4 growth poles, 4 development corridors. BSC News. https://www.bsc.com.vn/tin-tuc/tin-chi-tiet/946523-quy-hoach-tinh-dien-bien-thoi-ky-2021-2030-tam-nhin-den-nam-2050-4-cuc-tang-truong-4-hanh-lang-phat-trien

Dien Bien Portal. (2017). Some features of tourism in Dien Bien Province. Dien Bien Tourism Portal. https://btctdbp-svhttdl.dienbien.gov.vn/portal/pages/2017/Doi-net-ve-du-lich-tinh-Dien-Bienvrwf0n2ojwd8.aspx

Dien Bien Portal. (n.d.). Investment potential and advantages - Dien Bien Province Electronic Information Portal. https://dienbien.gov.vn/portal/Pages/tiem_nang_va_cac_loi_the_dau_tu.aspx

Dien Bien TV. (2014). Dien Bien tourism - potential and development orientation. Dien Bien Radio and Television Station. https://dienbientv.vn/tin-tuc-su-kien/van-hoa/201407/du-lich-dien-bien-tiem-nang-va-dinh-huong-phat-trien-2324158

Dien Bien TV. (2022). Building community tourism - how to do it in Na Su Village. Dien Bien Radio and Television Station. https://dienbientv.vn/tin-tuc-su-kien/van-hoa/202211/xay-dung-du-lich-cong-dong-cach-lam-o-na-su-5794385

Duy, T., & Thanh, T. (2012). Exploiting cultural potential in tourism development in Dien Bien. Dien Bien Portal. [invalid URL removed]

Ha, K. (2023, May 6). Điện Biên strives to develop tourism potential. People's Army Newspaper. https://www.qdnd.vn/kinh-te/cac-van-de/dien-bien-no-luc-phat-trien-tiem-nang-du-lich-727268

Hang, T. (2022, October 28). Connecting and promoting Dien Bien tourism with the provinces of Northern Laos. Border Guard Newspaper. https://www.bienphong.com.vn/ket-noi-quang-ba-du-lich-dien-bien-voi-cac-tinh-bac-lao-post455754.html

Hoang, L. (2021). Điện Biên develops tourism to become a small economic sector. Industry and Trade Journal. https://tapchicongthuong.vn/bai-viet/dien-bien-dua-du-lich-tro-thanh-nganh-kinh-te-mui-nhon-85364.htm

Hung, N. (2023, November 25). Điện Biên: developing tourism into a spearhead economic sector. Cong Thuong Review. https://tapchicongthuong.vn/dien-bien--dua-du-li--ch-tha--nh-nga--nh-kinh-te-mu--i-nho--n-114173.htm

Khai, A. (2022, October 24). Điện Biên develops community tourism. Dan Tri Electronic Newspaper. https://dantri.com.vn/du-lich/dien-bien-phat-trien-du-lich-cong-dong-

20221109092802193.htm?fbclid=IwAR2rlu-nGiq3twebAtSStfV1Dn42K2cNtKv41I3Ov-DVc1SW3W9Ne1EZvx0
Le, D. (2019). Dien Bien tourism - potential and achievements. Dien Bien Radio and Television Station. https://dienbientv.vn/du-lich/201902/du-lich-dien-bien-tiem-nang-va-nhung-thanh-tuu-5620443
Nam Po District's People Committee. (2023). Submission for approval of the OCOP Na Su model plan [Google Docs]. https://drive.google.com/file/d/17vKW7UIVBumvaTpDspd3kG_c9Mpk1aWg/view?usp=drive_link
Nam Po District's People Committee. (2023). Survey report on Thai costume embroidery [Google Docs]. https://drive.google.com/file/d/1Fpl71u-VzP-Xq88SBQQtEWqVDfNoPAhk/view?usp=drive_link
Nguyen, H. (2021). Điện Biên to preserve and promulgate ethnic cultural values for tourism development as a spearhead economic sector. Communist Magazine. https://www.tapchicongsan.org.vn/web/guest/thuc-tien-kinh-nghiem1/-/2018/824126/tinh-dien-bien-bao-ton-va-phat-huy-gia-tri-di-san-van-hoa-cac-dan-toc-de-phat-trien-du-lich-thanh-nganh-kinh-te-mui-nhon.aspx
Nguyen, H. B. (2022). Điện Biên: Tourism businesses recover and accelerate. Enterprise Integration Magazine. https://doanhnghiephoinhap.vn/dien-bien-doanh-nghiep-nganh-du-lich-phuc-hoi-tang-toc.html
Nguyen, T. N., & Nguyen, T. N. (2021). Developing tourism activities in Dien Bien Province. Asia-Pacific Economy Magazine.
Nguyet, L. (2019). Điện Biên tourism, opportunities and challenges. Ministry of Culture, Sports and Tourism. https://vietnamtourism.gov.vn/post/29761
Nhung, H. (2024). Many positive signs from the National Tourism Year in Dien Bien in 2024. Dien Bien provincial department of culture, sport and tourism portal. [invalid URL removed]
Pham, Q. K. (2021, October 14). Opening of Hanoi - Dien Bien route and announcement of Ho Chi Minh City - Dien Bien route. People's Army Newspaper. https://www.qdnd.vn/xa-hoi/tin-tuc/khai-truong-duong-bay-ha-noi-dien-bien-va-cong-bo-duong-bay-tp-ho-chi-minh-dien-bien-674171
Phan, T. (2022, January 20). Expanding Dien Bien Airport, 'giving wings' to the economy of the Northwest region. Government Newspaper. https://baochinhphu.vn/mo-rong-san-bay-dien-bien-chap-canh-kinh-te-vung-tay-bac-102220120162519252.htm
Postma, A., & Schmuecker, D. (2017). Understanding and overcoming negative impacts of tourism in city destinations: Conceptual model and strategic framework. Journal of Tourism Futures, 3(2), 144-156. https://doi.org/10.1108/JTF-04-2017-0018
Quyen, V. H., & Huy, L. (2022, November 3). OCOP products associated with tourism development of Dien Bien. Industry and Trade Newspaper. https://congthuong.vn/di-san-van-hoa-dan-toc-xa-huanh-luu-nhac-nho-truyendong-594407
Resources and Environment Newspaper. (2022, October 18). Na Su (Nam Po - Dien Bien): Building a model of green community tourism. Resources and Environment Newspaper. https://dttg.baotainguyenmoitruong.vn/na-su-nam-po-dien-bien-xay-dung-mo-hinh-du-lich-xanh-cong-dong-345859.html
Resources and Environment Newspaper. (2023, December 21). Điện Biên tourism welcoming one million tourists in 2023. Resources and Environment Newspaper. https://baotainguyenmoitruong.vn/du-lich-dien-bien-don-1-trieu-luot-du-khach-nam-2023-368264.html
Sam, P. (2016). Removing difficulties for Dien Bien tourism. Baodienbienphu.com.vn. https://www.baodienbienphu.com.vn/tin-tuc/du-lich/121329/go-kho-cho-du-lich-dien-bien
Song, A. (2021, April 6). Điện Biên: People are upset because spontaneous landfill causes pollution. Lao Dong Newspaper. https://laodong.vn/ban-doc/dien-bien-dan-buc-xuc-vi-bai-rac-tu-phat-gay-o-nhiem-895627.ldo
Song, N. V., Dang, Q. N., Ba, U. T., Phuong, N. L., Quang, N. N., Minh, P. N., & Hoang, M. T. T. (2022). Tourism development affects farmers' household livelihoods: Case study in Vietnam. Environment, Development and Sustainability, 25(12), 15163-15181. https://doi.org/10.1007/s10668-022-02614-x
Thang, B. Q. (2022). Điện Biên organizes activities to commemorate the Dien Bien Phu Victory. Vietnam Tourism Portal. https://vietnamtourism.gov.vn/post/40353
Thu, V. (2023, November 2). Building a sustainable future for the tourism industry. Nhan Dan Electronic Newspaper. https://nhandan.vn/xay-dung-tuong-lai-ben-vung-cho-nganh-du-lich-post780613.html
Thuvienphapluat.vn. (2017). Law 09/2017/QH14 on tourism. Law Library. https://thuvienphapluat.vn/van-ban/EN/Van-hoa-Xa-hoi/Law-09-2017-QH14-on-tourism/360188/tieng-anh.aspx
Thuvienphapluat.vn. (2021). Decision 549/QD-UBND 2021 on implementing energy saving and efficiency in

Dien Bien Province. Law Library. https://thuvienphapluat.vn/van-ban/Tai-nguyen-Moi-truong/Quyet-dinh-549-QD-UBND-2021-thuc-hien-su-dung-nang-luong-tiet-kiem-va-hieu-qua-tinh-Dien-Bien-478245.aspx

Tran, M. T., & Nguyen, T. T. (2023). Development potential of community tourism in Na Tong village, Muong Phang Commune, Dien Bien Province. Vietnam Journal of Cultural Heritage, 12(2), 45-53. [invalid URL removed]

Trinh, D. P., & Phuong, T. (2021). Vietnam's tourism in the context of the COVID-19 pandemic: Challenges and solutions. Asia-Pacific Economy Magazine.

Tu, L. (2019). Điện Biên: Among the 6 localities with the lowest population. Dien Bien Radio and Television Station. https://dienbientv.vn/tin-tuc-su-kien/xa-hoi/201907/dien-bien-nam-trong-6-dia-phuong-co-dan-so-thap-nhat-5641849

Tu, T. H. (2022). Promoting tourism in the northern mountainous region. National Tourism Administration. https://vietnamtourism.gov.vn/post/40354

Tuan, T. (2018). Dien Bien responds to the impacts of climate change. Dien Bien Radio and Television Station. https://dienbientv.vn/tin-tuc-su-kien/xa-hoi/201808/dien-bien-ung-pho-voi-nhung-tac-dong-cua-bien-doi-khi-hau-5595108

UNDP. (2015). Sustainable Development Goals. United Nations Development Programme. https://www.undp.org/sustainable-development-goals

Van, P., & Ngoc, H. (2023). Điện Biên tourism development. Dien Bien Radio and Television Station. https://dienbientv.vn/tin-tuc-su-kien/kinh-te/202305/khoi-sac-du-lich-dien-bien-5803371

Van, Q. L. (2020). Strategic orientations for tourism development in Dien Bien. Vietnam Tourism Review, 3(2), 20-24.

VOV. (2023, July 19). Điện Biên develops tourism from the cultural identity of ethnic groups. Ministry of Culture, Sports and Tourism. https://bvhttdl.gov.vn/dien-bien-phat-trien-du-lich-tu-ban-sac-van-hoa-cac-dan-toc-20230719075253136.htm

Vu, H. L. (2023). Dien Bien's tourism growth forecast for the upcoming decade. Dien Bien People's Committee. [invalid URL removed]

Winchenbach, A., Hanna, P., & Miller, G. (2019). Rethinking decent work: The value of dignity in tourism employment. Journal of Sustainable Tourism, 27(7), 1 1026-1043. https://doi.org/10.1080/09669582.2019.1566346

Xuan, T. (2022, November 11). Forests in the Dien Bien Highlands are still being "gutted." Vietnam News Agency. https://baotintuc.vn/phong-su-dieu-tra/rung-o-vung-cao-dien-bien-van-bi-rut-ruot-20221111093325930.htm

The Impact of Globalization, Gender Development and Exports on Economic Growth: An Empirical Study in Viet Nam

Nguyen Anh Tru, Tran Huu Cuong

Vietnam National University of Agriculture, Vietnam

Abstract:

The paper aims to explore the relationship between globalization, gender development, exports, and economic growth in Viet Nam between 1991 and 2020 using the Vector Error Correction Model. It has been empirically found that gender development index discourages globalization and exports, while exports may support globalization of Viet Nam in the short term. Moreover, results also presented the existence of a unidirectional causality running from GDP per capita, GDI, and exports to globalization. Further, about 14 percent of disequilibrium of globalization in the long term was corrected by the change of GDP per capita, GDI, and exports in the short term. In the long term, results demonstrated that economic development of Viet Nam may gain benefits from globalization process, but gender inequality and exports reduce economic growth of this country. The Johansen co-integration test confirmed the relationship among variables in the long term. Policies were recommended to facilitate economic growth and achieve sustainable development for Viet Nam. First, policies in gender should be implemented to reduce gender inequality because it may discourage globalization and exports of Viet Nam. Second, the process on international economic integration should be encouraged since it supports Viet Nam to gain benefits from the global market. Lastly, although exports enhance globalization, trade policy of Viet Nam should be concentrated on exploiting the domestic market as well as improving the

Contact Nguyen Anh Tru: Tel/Fax +84-24 6261 7554; e-mail nguyenanhtru@gmail.com

quality of exported goods and services.

Keywords: Globalization, Gender Development, Exports, Economic Growth

1. Introduction

After 35 years of the Renovation since 1986, Viet Nam gained remarkable achievements. Gross domestic product (GDP) growth, employment creation, poverty reduction, and human development have been seen as impressive outcomes of this country for the last three decades (UNDP, 2021). Between 2016 and 2020, the annual economic growth rate reached 5.99 percent, on average, that was ranked as the highest rate in Southeast Asia. Starting at US$205.3 billion in 2016, the GDP increased by nearly US$70 billion to reach US$271.2 billion in 2020. By 2020, GDP per capita accounted for US$2,779, which was higher than that in 2015 by 1.33 times. The average export and import turnover reached US$251.4 billion and US$247.6 billion, respectively between 2016 and 2020 (General Statistics Office, 2021a). However, protection policies of developed economies and instable finance, and adverse effects from the Covid-19 pandemic were defined as new issues faced by Viet Nam (UNDP, 2021).

Globalization has generated a new world where countries depend on each other, especially in science-technology advances and economic growth. The power of globalization was determined by linkages, cooperation, competition and collision alike (Quy, 2008). Today, globalization is defined as one of the most important factors of economic development. Success or failure of globalization depends on its management. Export expansion, closing technological, capital and knowledge gaps were advantages from globalization. However, management of international economic institutions was an obstacle of globalization because international institutions regulate the rules of the game (Stiglitz, 2002).

Under the globalization trend, Viet Nam presented a broad and deep international economic integration by joining ASEAN, APEC, and ASEM in 1995, 1998, and 2001 (Dat & Van, 2018). Further, participating in the World Trade Organization (WTO) in 2007 and then signing 18 Free Trade Agreements (FTAs) with numerous partner countries and regions were expressed the commitment of Viet Nam to the international community in terms of facilitating trade.

The gender development index (GDI) was used to measure gender inequalities in achievement based on three basic dimensions of human development, including health (measured by female and male life expectancy at birth), education (measured by female and male expected years of schooling for children and mean years for adults aged 25 years and older), and command over economic resources (measured by female and male estimated GNI per capita) (UNDP, 2018).

Table 1. GDP per capita, globalization index, and exports of Viet Nam

Year	GDP per capita (constant 2015US$)	Globalization index	Gender development index	Exports (% of GDP)
1991	698.43	30	0.937	30.92
2020	3,352.06	63	1.001	84.38

Source: World Bank, 2023

As seen in Table 1, GDP per capita of Viet Nam sharply increased by about 4.8 times from US$698.43 in 1991 to US$3,352.06 in 2020, while globalization index climbed 33 levels, and gender development index increased by 0.064 in the same period. Starting by 30.92 percent in 1991, exports of Viet Nam increased by more than 2.7 times to reach 84.38 percent in 2020 (Table 1).

Some previous studies evaluated the effect of globalization on social-economic development of Viet Nam. Quy (2008) assessed globalization index of Viet Nam in 2007, while Abbott & Tarp (2012) examined the nexus between globalization, trade, and development in Viet Nam. Dat & Van (2018) investigated the influence of globalization on economic growth of Viet Nam between 1995 and 2014 and they argued that globalization facilitates the Vietnamese

economy and this country gained from the international economic integration. Likewise, Van (2019) examined the relationship between globalization and industrial development in Viet Nam for the period 1995-2015 and she found that globalization had a significant and positive impact on industrial development in Viet Nam. Pham & Talavera (2018) investigated the nexus between discrimination, social capital, and financial constraints of micro, small, and medium enterprises in the manufacturing sector of Viet Nam for three years (2011, 2013, and 2015). Results addressed that female entrepreneurs have a higher probability of getting a loan and they pay lower interest rates than their counterparts. Similarly, Bach *et al*. (2023) concluded that female-run firms have a lower propensity to borrow and incur a higher cost of borrowing from informal sources than male-run counterparts.

Although globalization, GDI, and exports were identified as important factors affecting economic growth, but none of these studies explore the relationship between globalization, GDI, exports, and economic growth of Viet Nam. Therefore, the study aims to explore the impact of globalization, GDI, and exports on economic growth of Viet Nam between 1991 and 2020 using the Vector Error Correction Model (VECM). Further, policies were recommended to foster economic growth and achieve sustainable development for Viet Nam.

The rest of this paper was organized as follows. The literature review is presented in section 2. Section 3 illustrated the methods. Results and discussion are discussed in section 4. Finally, section 5 presented the conclusion and policy implications.

2. Literature review

2.1 The relationship between globalization and economic growth

Ahmed *et al*. (2021) investigated the nexus between ecological footprint, economic

globalization, economic growth, and financial development in Japan. Results indicated that economic globalization and financial development increase footprint in Japan. Asongu & Odhiambo (2023) evaluated economic sector and globalization channels for gender economic inclusion in 35 Sub-Saharan African countries between 1995 and 2019. They argued that economic and political globalization positively affect female employment in agriculture and the positive effect of economic globalization is driven by the trade globalization dynamic while social globalization negatively affects female employment in agriculture and the negative effect of social globalization is driven by cultural and informational globalization dynamics. Besides, aggregate globalization and sub-components negatively affect gender employment in the industry and the negative effect is driven by the financial globalization sub-component of economic globalization and by the informational and cultural components of social globalization. Further, aggregate globalization and sub-components positively affect gender employment in the service sector and the corresponding positive effect is driven by the trade globalization sub-component of economic globalization and by all sub-components of social globalization. Guo *et al*. (2023) examined the relationship between trade openness, economic complexity, economic growth, and globalization in newly industrialized countries (NICs) for the period 1990-2019. Results demonstrated that trade openness, globalization, and economic growth are negative, while economic complexity positively affects the material footprints in the NICs.

Further, Jahanger *et al*. (2022) explored the association between technological innovation, natural resource consumption, globalization, economic growth, human capital development, and financial development, and the ecological footprint figures in 73 developing countries between 1990 and 2016. Results stated that the variables have a mixed order of integration and are cointegrated. On the other hand, the long-run regression outcomes show that natural resource

consumption significantly increases ecological footprint while technological innovations help to inhibit them. Li *et al*. (2023) assessed the nexus between the total natural resources, GDP, urbanization, and economic recovery in China from 1980 to 2018. They found that an increase in natural resources negatively impacts economic development in the long run. However, long-term gains in financial development and natural resources have led to higher economic recovery. Murshed *et al*. (2022) investigated the relationship between renewable energy use, financial inclusivity, economic growth, globalization, urbanization, and carbon productivity in the seven emerging countries between 2007 and 2018. Results indicated that the increase of the level of energy use efficiency by 1 percent may help to improve carbon productivity by around 0.3 percent in the long run. In addition, the predicted net effects reveal that energy efficiency gains exert a moderating effect on the level of carbon productivity and reverse the negative impact of financial inclusivity, trade globalization, and urbanization on carbon productivity.

Nasreen *et al*. (2020) evaluated the impact of financial globalization, institutions and economic growth on the development of financial sector in European countries for the period 1989-2016. Findings revealed that economic growth and institutional quality are positively associated with financial development. However, financial globalization hinders the process of financial sector development. Sethi *et al*. (2020) examined the effect of globalization, financial development, economic growth, and energy consumption on environmental sustainability in India between 1980 and 2015. Results demonstrated that an increased level of globalization and financial development while improving economic performance are inimical to the sustainability of the environment. In the short-run, globalization, economic growth, and increased energy consumption are contributing directly to environmental degradation, while banking sector development is impacting environmental sustainability adversely through the economic growth channel. Dat &

Van (2018) examined the influence of globalization on economic growth in Viet Nam for the period 1995-2014. The results show that globalization, measured by the KOF index, promotes economic growth and Viet Nam has gained from integrating into the global economy. The overall index of globalization had positively and significantly impacted the economic growth in Vietnam. The results also indicated that economic globalization had a significantly positive effect on economic growth in the period examined. The study further revealed that foreign direct investment and the exchange rate affect economic growth positively whereas balance of trade affects economic growth negatively.

2.2 The relationship between gender development index and economic growth

Iqbal *et al*. (2022) examined the impact of religious tensions, governance, economic growth, and education on gender equality of 59 developing countries between 1995 and 2015. They found that both gender equality and religious tensions have spillovers in neighboring countries. Moreover, reducing religious tensions and increasing economic growth promote gender equality and have positive spillovers in neighboring countries as well. Minasyan *et al*. (2019) investigated the relationship between gender inequality in education and per capita economic growth. Results indicated that include male and female education as separate covariates in the growth regression report larger correlation sizes of female compared to male education with economic growth. Nguyen (2021) evaluated the impact of gender equality on economic complexity in 119 countries between 1991 and 2017. He asserted that labor participation in industry or service sectors as well as wage and salaried employment by women appears to improve economic complexity, while women's employment in agriculture, contributions to family workers, self-employment, and vulnerable employment have a negative impact. Besides, better health conditions

for women increase economic complexity. In addition, gender equality in education has a positive impact on economic complexity. Moreover, the empowerment of women in terms of socioeconomic-political rights is a positive factor for economic complexity.

2.3 The relationship between exports and economic growth

Dritsaki (2013) examined the relationship between economic growth, exports and government debt of Greece from 1960 to 2011. Results stated that both short and long run relationships exist among these variables. Specifically, the results show that there is a unidirectional Granger causality that runs from exports to economic growth as well as from economic growth to government debt, whereas there is no short run causal relationship between exports and government debt. In the long run, the results show that there is a unidirectional Granger causality that runs from economic growth to government debt. Sunde (2017) investigated the nexus between economic growth, foreign direct investment (FDI), and exports in South Africa between 2001 and 2010. Results indicated that FDI does not cause economic growth. The VECM Granger causality analysis found unidirectional causality between economic growth and FDI running from FDI to economic growth, unidirectional causality between FDI and exports running from FDI to exports and bidirectional causality between economic growth and exports. Finally, Linh *et al*. (2023) examined the causality among export, FDI inflows and economic growth in Viet Nam using quarterly time-series data from 2000Q1 to 2017Q4. The results from the Johansen Cointegration test indicated that there was no long-term equilibrium nexus existing between them. There was a bilateral relationship between GDP and exports, whereas GDP-FDI and export-FDI are one-way relationships since both GDP and exports were found by Granger to cause an increase in FDI in Vietnam but not vice versa. The findings of the causality relationship from GDP to exports and

FDI and from exports to FDI in the short term imply that promotions in Vietnam's economic growth will boost export activities as well as attract more inward FDI to the country.

2.4 The context of globalization, gender development, exports, and economic growth in Viet Nam

The Vietnamese economy was reformed since it implements the *Doi Moi* (Renovation) in 1986. Economic integration has allowed this country to access the world market, adapt international trade rules, and participate deeper in global value chains. By 2018, economic integration was concentrated on liberalization of trade and investment with the changes in labour mobility, environmental standards, competition policy, amongst others in the new generation FTAs such as the Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP), European Union (EU)–Vietnam FTA (EVFTA), amongst others (Vo et *al.*, 2022).

Viet Nam has remarkable achievement in gender equality, especially in improving gender inequality in education, employment, and health. Also, the gender gap in earnings of Viet Nam is lower than that in many other East Asian countries, and women's outcomes have significant improvements. According to the report on the Gender Inequality Index released by UNDP, Viet Nam has jumped from the low middle-rank group in 1999 to the upper middle-rank group in 2008. Viet Nam was ranked in the 6th position in Southeast Asia in its Human Development Index, while Vietnam's Gender Inequality Index was 0.296 in 2021, standing at the 71st out of 170 countries. This country has continued to carry out policies and laws on gender equality, including the issuance of the Law on Support for Small- and Medium-sized Enterprises (2017); the National Strategy and Programme on Combating Gender-Based Violence (2021-2030); Amendments to the Law on

Prevention and Control of Domestic Violence (2022); Amendments to the Labour Code (2019) and the recent National Action Plan on Women, Peace and Security. However, this country is facing a number of issues in gender differences. For instance, gender gap in poverty is small, but older women – especially in rural areas – are overrepresented among the poor (World Bank, 2011). Further, the strategy on economic development of Viet Nam is designed to engage global integration and enhance international competitiveness, and therefore it is necessary to invest more in the skills and productivity of the many women who work for a wage in export-oriented factories (UN Women, 2016). In the macro level, the challenge in gender gap of Viet Nam should be resolved not only by focusing on basic human capabilities, but also by addressing the barriers and biases to women's empowerment, participation and security (UN Women, 2021).

By 2023, import and export activities of Viet Nam faced bottlenecks in the aspect of declining world aggregate demand and uncertain factors in the export markets. The total preliminary export and import turnover reached US$681.1 billion, falling 6.9 percent compared to that in the previous year, of which export turnover reached US$354.7 billion, a decline by 4.6 percent, and import turnover reached US$326.4 billion, a drop of 9.3 percent (General Statistics Office, 2024).

GDP per capita at current prices always reached a higher rate than that of the previous year. In 2023, it reached 4,323 US$/person, increasing 168 US$, on average. GDP at current prices in 2023 reached VND10,320.3 trillion, equivalent to US$433.7 billion (in 2022 it reached VND9,621.4 trillion, equivalent to US$413.3 billion), ranking the 5th in the ASEAN region and the 35th in the world (General Statistics Office, 2024).

3. Methodology

3.1 Data

To evaluate the relationship between globalization, GDI, exports, and economic growth of Viet Nam between 1991 and 2020, data from the KOF, World Development Indicators (WDI) and UNDP was gathered. This period covers the Renovation Era when the Vietnamese economy was transferred from a central planned economy to a market-oriented economy since 1986. Therefore, a total of 30 observations were used for the study. The panel data was employed for the study because of a large sample, more degree of freedom, as well as avoiding multicollinearity among variables, and time heterogeneity (Hsiao, 2014).

3.2 The vector error correction model (VECM)

The model for this study was constructed according to work of Dat & Van (2018).

$$GDP_t = f(GL_t, GDI_t, EX_t) \quad (1)$$

Where: GDPt denotes GDP per capita (constant 2015US$); GLt presents the overall global development index (KOF) measured by three components, including an economic globalization index (36 percent), a social globalization index (38 percent) and a political globalization index (26 percent); GDIt means gender development index that was used to measure gender inequalities in achievement in three basic dimensions of human development: health, measured by female and male life expectancy at birth; education, measured by female and male expected years of schooling for children and female and male mean years of schooling for adults ages 25 years and older; and command over economic resources, measured by female and male estimated earned income; and EXt denotes exports of goods and services (% of GDP).

Table 2. Justification of variables in the VECM

Variable	Description	Source	Previous references
GDP per capita	GDP per capita (constant 2015US$)	WDI	Dat & Van (2018); Jahanger et al. (2022); Murshed et al. (2022); and Guo et al. (2023)
GL	Overall globalization index	KOF	Dat & Van (2018); Jahanger et al. (2022); Murshed et al. (2022); and Guo et al. (2023)
GDI	Gender development index	UNDP	Minasyan et al. (2019); Nguyen (2021); and Iqbal et al. (2022)
Exports of goods and services	% of GDP	WDI	Dritsaki (2013); Sunde (2017); and Linh et al. (2023)

The Equation 1 can be transformed into Equation 2 as follows:

$$LnGDP_t = \beta_0 + \beta_1 lnGL_t + \beta_2 lnGDI_t + \beta_3 lnEX_t + \varepsilon_t \qquad (2)$$

Where: lnGDPt, lnGLt, lnGDIt, and lnEXt denote the natural logarithms of GDP per capita, the overall globalization index, gender development index, and exports of goods and services; β0 is the intercept; (β1,…,β3) are parameters to be estimated; and Ɛt presents the error term.

There are three steps to run the VECM as follows. First, the stability of the series or their order of integration in all variables will be examined. In this article, the Augmented Dickey Fuller (ADF) test and Phillips-Perron (PP) test were used to check the stability of the series. Next, the Johansen co-integration test was employed to investigate a long run relationship among all covariates. Finally, the VECM was estimated both in the short and long run.

The procedure of the VECM includes four steps as follows. First, the stationary of the series or their order of integration in all variables will be checked. In this article, the Augmented Dickey Fuller (ADF) test and Phillips-Perron (PP) test were employed to examine the stability of the series. If a variable contains a unit root, then this implies that the time series of this variable is not stationarity. Second, the optimal lag was determined. The number of the optimal lag will be determined by choosing the smallest value recommended by indicators such as Akaike information

criterion (AIC), Hannan-Quinn information criterion (HQIC), and Schwarz's Bayesian information criterion (SBIC). Next, the Johansen co-integration test was used to investigate a long run relationship among all covariates. Finally, the VECM was estimated both in the short and long run. The speed of adjustment from the short run equilibrium to long run equilibrium was determined by the error correction term.

4. Results and discussion

4.1 Overview on economic growth, overall globalization index, gender development index, and exports of Viet Nam

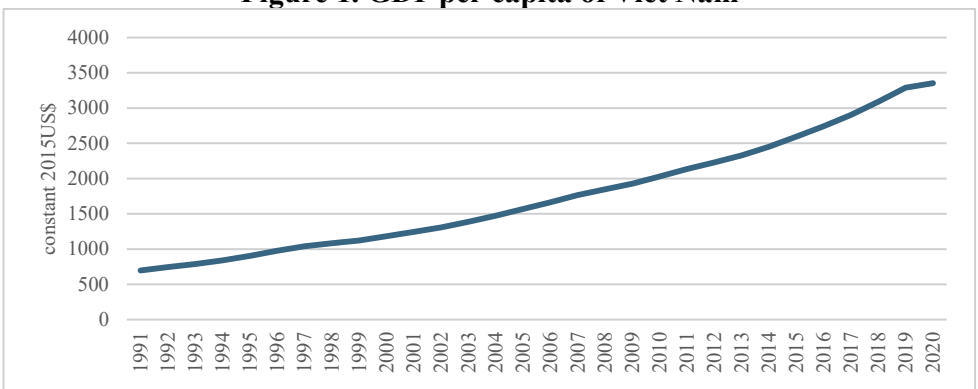
Table 3. Characteristics of economic growth, overall globalization index, gender development index, and exports of Viet Nam

Variable	Mean	SD	Min	Max
GDP per capita	1756.98	801.39	698.43	3352.06
Overall globalization index	49.13	11.20	30	65
Gender development index	0.97	0.02	0.93	1.00
Exports	58.43	16.64	28.72	85.16

Source: Author's calculation, 2023
Note: SD denotes standard deviation

As seen in Table 3 indicates that the average GDP per capita of Viet Nam accounts for US$1,756.9. The overall globalization index and GDI account for 49.1 and 0.97, respectively. The average exports of goods and services of Viet Nam account for 58.4 percent (Table 3).

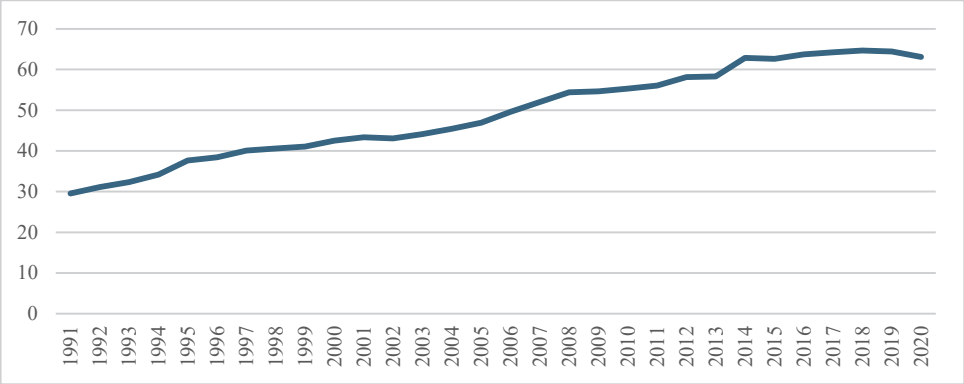
Figure 1. GDP per capita of Viet Nam



Source: World Bank, 2023

GDP per capita of Viet Nam increased between 1991 and 2020. Starting with about US$743 in 1991, GDP per capita of this country rose by 4.7 times to reach US$3,352 in 2020 and this implies a remarkable achievement in the Renovation of this country for the last nearly five decades (Figure 1).

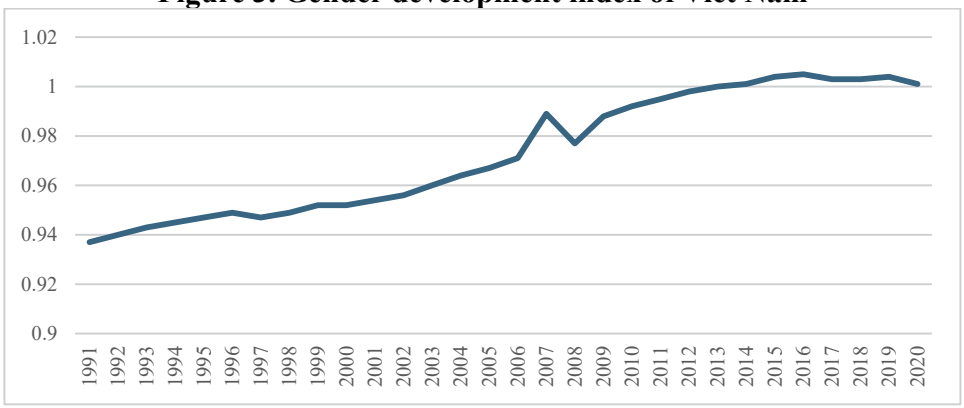
Figure 2. The overall globalization index of Viet Nam



Source: KOF, 2023

As seen in Figure 2, the overall globalization index of Viet Nam climbed 33 levels from 30 in 1991 to 63 in 2020 and this implies the broad and deep integration of this country into international community (Figure 2).

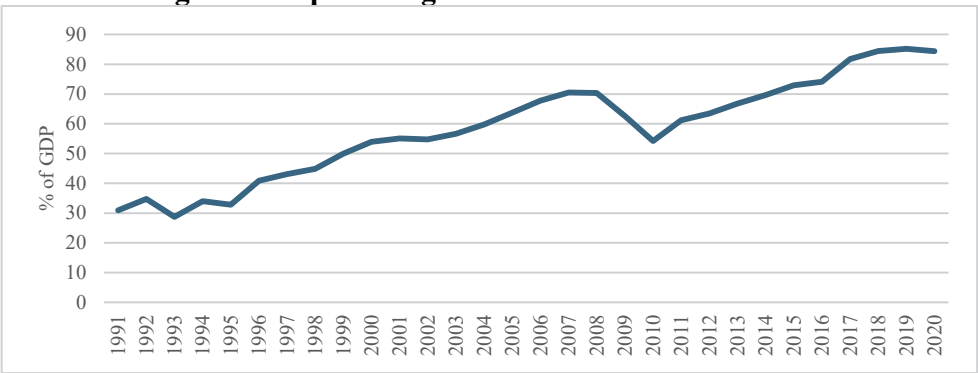
Figure 3. Gender development index of Viet Nam



Source: UNDP, 2023

Figure 3 shows that gender development index of Viet Nam increased by 0.064 from 0.93 in 1991 to 1 in 2020 (Figure 3).

Figure 4. Exports of goods and services of Viet Nam



Source: World Bank, 2023

As seen in Figure 4, exports of goods and services of Viet Nam increased about 53 percent from about 30 percent in 1991 to more than 84 percent in 2020 (Figure 4). This reflects the role of the international market in economic development of Viet Nam.

4.2 The influence of the overall globalization index, gender development index, and exports on the Vietnamese economy

The unit root test

The Augmented Dickey-Fuller (ADF) test and the Phillips-Peron (PP) test were employed to examine the stationarity of all variables with the hypothesis as follows:

Null hypothesis (H0): The variables contain a unit root

Alternative hypothesis (Ha): The variables do not contain a unit root

If a variable contains a unit root, then this implies that the time series of this variable is not stationarity.

Table 4. Results of the unit root test

Variables		ADF Test		PP Test		Conclusion
		Level	1st difference	Level	1st difference	
LnGDP per capita	Constant	-1.52	-3.42***	-1.79	-2.93**	I(1)
	Constant & trend	-2.93	-3.87**	-2.30	-3.21*	I(1)

LnGL	Constant	-2.57*	-1.98	-3.05**	-3.67***	I(1)
	Constant & trend	-1.11	-2.81	-1.13	-4.61***	I(1)
LnGDI	Constant	-1.05	-4.15***	-1.41	-8.61***	I(1)
	Constant & trend	-0.92	-4.18***	-2.47	-8.64***	I(1)
LnExports	Constant	-1.06	-3.28**	-1.42	-6.50***	I(1)
	Constant & trend	-1.51	-3.52**	-2.03	-6.46***	I(1)

Source: Author's calculation, 2023
*Note: ***, ** and * denote statistical significance at 1%, 5%, and 10%, respectively*

As seen in Table 4, the time series of all variables did not stationary at the level [I(0)]. Thus, the first difference was implemented to examine the stationary of all variables. Results indicate that the absolute values of test statistics were greater than critical values at the 1% and 10%, respectively and therefore we can conclude that the time series of these variables do not contain unit roots.

Examination of the relationship among variables in the long run

This step aims to determine the optimal lag for the VECM.

Table 5. Selection of the lag length

Lag	LL	LR	df	P	FPE	AIC	HQIC	SBIC
0	170.95				3.1e-11	-12.84	-12.78	-12.64
1	289.77	237.65	16	0.000	1.2e-14	-20.75	-20.47	-19.78*
2	304.12	28.69	16	0.026	1.5e-14	-20.62	-20.12	-18.88
3	329.86	51.48	16	0.000	9.1e-15*	-21.37	-20.64*	-18.85
4	346.88	34.02*	16	0.005	1.6e-14	-21.45*	-20.50	-18.16

Endogenous: LnGDP LnGL LnGDI LnExports
Exogenous: Constant
Number of observations = 26

Source: Author's calculation, 2023
*Notes: *denotes lag order selected by the criterion; LL means log likelihood values; LR represents sequential modified LR test statistics; FPE denotes final prediction error; AIC means Akaike information criterion; HQIC represents Hannan-Quinn information criterion, and SBIC means Schwarz's Bayesian information criterion*

As seen in Table 5, AIC recommend that the optimal lag is four lags, while HQIC and

SBIC indicators recommend three lags and one lag, respectively. The number of the optimal lag was selected based on the smallest value recommended by indicators. Therefore, four lags (the number of lags is equal to 4) were chosen to run the VECM in the third step. The long-run relationship among variables was checked by the Johansen co-integration test with the following hypothesis:

Null hypothesis (H0): There is no co-integration among variables

The alternative hypothesis (Ha): There is co-integration among variables

Table 6. Results of Trace statistic in the Johansen co-integration test

Maximum rank	LL	Eigenvalue	Trace statistic	5% critical value	1% critical value
0	309.88		73.98	47.21	54.46
1	333.49	0.83	26.78*1*5	29.68	35.65
2	344.48	0.57	4.78	15.41	20.04
3	346.87	0.16	0.00	3.76	6.65
4	346.88	0.00			

Source: Author's calculation, 2023
*Note: *1 and *5 denote the number of co-integration (ranks) chosen to accept the null hypothesis at 1% and 5% critical values*

As seen in Table 6, trace statistics are smaller than the 1% critical value (26.78 < 35.65) and the 5% critical value (26.78 < 29.68) and reflect that there is one co-integration at the 1% and 5% critical values among variables.

Estimation of the VECM

Table 7. Estimation of the VECM in the short run

Variables	Coefficient	Std. Error	z	P-value
DLnGDP per capita				
Error correction term (ECT)	0.02	0.04	0.51	0.607
LnGDP per capita				
LD	0.27	0.30	0.92	0.359
L2D	-0.62*	0.32	-1.89	0.058
L3D	0.30	0.35	0.87	
LnGlobalization				
LD	0.17	0.17	1.03	0.302

L2D	0.11	0.15	0.78	0.433
L3D	0.04	0.15	0.28	0.781
LnGDI				
LD	1.08	2.46	0.44	0.658
L2D	0.11	1.60	0.07	0.941
L3D	-0.27	0.93	-0.29	0.772
LnExports				
LD	0.05	0.06	0.83	0.408
L2D	-0.05	0.04	-1.30	0.192
L3D	-0.00	0.04	-0.04	0.968
Constant	0.04**	0.02	2.09	0.037
DLnGlobalization				
Error correction term (ECT)	-0.14***	0.04	-3.46	0.001
LnGDP per capita				
LD	0.51	0.31	1.64	0.101
L2D	-0.19	0.34	-0.56	0.574
L3D	0.02	0.37	0.07	0.943
LnGlobalization				
LD	0.37**	0.17	2.10	0.036
L2D	-0.11	0.15	-0.71	0.479
L3D	-0.04	0.16	-0.30	0.762
LnGDI				
LD	-6.22**	2.58	-2.41	0.016
L2D	-3.83**	1.68	-2.27	0.023
L3D	-2.33**	0.98	-2.37	0.018
LnExports				
LD	0.00**	0.06	0.02	0.984
L2D	-0.08*	0.04	-1.84	0.066
L3D	-0.00**	0.04	-0.02	0.984
Constant	-0.00	0.02	-0.06	0.950
DLnGDI				
Error correction term (ECT)	0.00	0.01	0.15	0.881
LnGDP per capita				
LD	0.00	0.12	0.04	0.967
L2D	0.08	0.14	0.58	0.565
L3D	0.05	0.15	0.34	0.733
LnGlobalization				
LD	0.04	0.07	0.60	0.548
L2D	0.00	0.06	0.12	0.906
L3D	-0.05	0.06	-0.89	0.376
LnGDI				
LD	-0.43	1.04	-0.41	0.681
L2D	0.18	0.68	0.27	0.785
L3D	0.25	0.39	0.63	0.526
LnExports				
LD	-0.00	0.02	-0.18	0.858

L2D	-0.01	0.01	-0.89	0.374
L3D	-0.00	0.01	-0.39	0.693
Constant	-0.00	0.00	-0.34	0.734
DLnExports				
Error correction term (ECT)	0.05	0.17	0.32	0.747
LnGDP per capita				
LD	0.30	1.30	0.23	0.817
L2D	0.26	1.42	0.19	0.852
L3D	0.68	1.52	0.45	0.653
LnGlobalization				
LD	1.02	0.74	1.38	0.168
L2D	-0.32	0.65	-0.49	0.621
L3D	0.15	0.67	0.23	0.818
LnGDI				
LD	3.94	10.67	0.37	0.712
L2D	-3.25	6.95	-0.47	0.640
L3D	-8.70**	4.05	-2.14	0.032
LnExports				
LD	0.17	0.27	0.61	0.541
L2D	-0.08	0.18	-0.45	0.654
L3D	-0.12	0.19	-0.62	0.535
Constant	-0.02	0.10	-0.22	0.829

Source: Author's calculation, 2023

*Notes: LD, L2D, and L3D mean lag 1, lag 2, and lag 3, respectively; ***, ** and * denote statistical significance at 1%, 5%, and 10%, respectively*

As seen in Table 7, the error correction term (ECT) of the Globalization model is negative and statistically significant (ECT = -0.14) and this implies that the existence of a unidirectional causality running from GDP per capita, GDI, and exports to globalization. Further, about 14 percent of disequilibrium of globalization in the long term was corrected by the change of GDP per capita, GDI, and exports in the short term. GDI has a significant and negative effect on globalization and exports of Viet Nam, while exports support globalization. These imply that the increase of gender inequalities may discourage globalization and reduce exports of Viet Nam. By contrast, the development of exports facilitates globalization process in this country.

Table 8. Estimation of the VECM in the long run

Variables	**Coefficient**	**Std. Error**	**z**	**P-value**
LnGDP per capita	1			
LnGlobalization	8.25***	1.14	7.20	0.000

LnGDI	-68.37***	7.52	-9.09	0.000
LnExports	-2.07***	0.27	-7.46	0.000
Constant	-33.18			

Source: Author's calculation, 2023
*Note: *** denotes statistical significance at 1%*

In the long run, it has been empirically found that globalization fosters economic growth, but GDI and exports decrease economic growth of Viet Nam. Therefore, it is necessary to improve the situation of gender inequality and renovate exports of goods and services.

4.3 Discussion

In the short run, results demonstrated that the increase of gender inequality discourages globalization and exports, while the development of exports encourages globalization of Viet Nam. Moreover, results also revealed the existence of a unidirectional causality running from GDP per capita, GDI, and exports to globalization. Further, about 14 percent of disequilibrium of globalization in the long term was corrected by the change of GDP per capita, GDI, and exports in the short term.

In the long run, it has been empirically found that the Vietnamese economy can be supported by globalization process, but GDI and exports may reduce economic growth of Viet Nam. Results of the Johansen co-integration test confirmed the relationship among variables in the long term. Our findings are consistent to conclusions of Dat & Van (2018) who found that there was a long run relationship between globalization and economic growth, and globalization process facilitated the Vietnamese economy. Further, we also found that gender inequality may discourage economic growth that was relevant to the argument of Nguyen (2021) who asserted that gender equality supports economic growth in Viet Nam. However, Linh et al. (2023) addressed that there was no long run relationship among exports, foreign direct investment, and economic growth in

Viet Nam. They also found that economic growth may facilitate exports of Viet Nam, while our results indicated that exports may discourage economic growth of Viet Nam.

Our findings can be interpreted by the following reasons. First, outcomes of economic development generate achievements in education, health, and poverty reduction in Viet Nam. For instance, adult literacy rate of Viet Nam accounted for 96.7 percent, followed by the Philippines (96.3 percent), Indonesia (96.0 percent), and Malaysia (95.0 percent). Viet Nam and Indonesia also obtained remarkable achievements in poverty reduction with the poverty rate decreased from 18.1 percent to 5.7 percent between 2005 and 2019 (ASEAN, 2021). Second, by 2020, trade openness of Viet Nam reached more than 200 percent of GDP, and this implies that this country broadly and deeply integrated into the international market. Hence, the Vietnamese economy may be gained benefits from participating in the global market and this reflects the role of globalization process in economic development of this country. Third, gender inequality should be continued to improve in Viet Nam since it harms economic growth in the long term. Lastly, although exports have been indicated as the key determinant to accelerate economic growth, trade policy of Viet Nam should be focused on encouraging the domestic demand to exploit the domestic market as well as improving the quality of exported goods and services. For example, the annual export growth rate of Viet Nam accounted for 11.8 percent between 2016 and 2020, on average.

5. Conclusion and policy implications

The aim of the article was to evaluate the nexus between globalization, gender development, exports, and economic growth of Viet Nam between 1991 and 2020 using the VECM. It has been empirically found that GDI discourages globalization and exports, while exports may support globalization of Viet Nam in the short term. Moreover, results also addressed the existence

of a unidirectional causality running from GDP per capita, GDI, and exports to globalization. Further, about 14 percent of disequilibrium of globalization in the long term was corrected by the change of GDP per capita, GDI, and exports in the short term. In the long term, results demonstrated that economic development of Viet Nam may gain benefits from globalization process, but gender inequality and exports reduce economic growth of this country. The Johansen co-integration test confirmed the relationship among variables in the long term.

Policies were proposed to facilitate economic growth and achieve sustainable development for Viet Nam. First, policies in gender should be considered to narrow down gender inequality because it may discourage globalization and exports of Viet Nam. Second, the process on international economic integration should be encouraged since it supports Viet Nam to gain benefits from the global market. Lastly, although exports play an important role in terms of facilitating globalization, trade policy of Viet Nam should be concentrated on exploiting the domestic market as well as improving the quality of exported goods and services.

References:

Abbott, P., & Tarp, F. (2012). Globalization crises, trade and development in Vietnam. *Journal of International Commerce, Economics and Policy*, *3*(01), 1–23.

Ahmed, Z., Zhang, B., & Cary, M. (2021). Linking economic globalization, economic growth, financial development, and ecological footprint: Evidence from symmetric and asymmetric ARDL. *Ecological Indicators*, *121*(107060), 1–12.

ASEAN (2021). ASEAN Key Figures 2021. The ASEAN Secretariat, Jakarta, December 2021.

Asongu, S. A., & Odhiambo, N. M. (2023, May). Economic sectors and globalization channels to gender economic inclusion in Sub-Saharan Africa. *Women's Studies International Forum*, *98*(102729), 1–11.

Bach, T. N., Le, T., Nguyen, T. X., & Hoang, K. (2023). Gender discrimination, social networks and access to informal finance of Vietnamese small and medium enterprises. *Economic Analysis and Policy*, *78*, 358–372.

Dat, T. T., & Van, N. T. C. (2018). Impact of globalization on economic growth in Vietnam: An empirical analysis. *Journal of Economics and Development*, *20*(1), 32–47. DOI: 10.33301/JED-P-2018-20-01-02.

Dritsaki, C. (2013). Causal nexus between economic growth, exports and government debt: the case of Greece. *Procedia Economics and Finance*, *5*, 251–259.

General Statistics Office (2021). *Situation and motivation on socio-economics of Viet Nam for 5 years (2016-2020)*. Statistical Publishing House, 2021.

General Statistics Office (2024). *Statistical yearbook of Viet Nam 2023*. Statistical Publishing House, 2024.

Guo, X., Meng, X., Luan, Q., & Wang, Y. (2023). Trade openness, globalization, and natural resources management: The moderating role of economic complexity in newly industrialized countries. *Resources*

Policy, *85*, 103757, 1–10.
Hsiao, C. (2014). Analysis of panel data. Third Edition. Cambridge University Press, New York.
Iqbal, A., Hassan, S., Mahmood, H., & Tanveer, M. (2022). Gender equality, education, economic growth and religious tensions nexus in developing countries: A spatial analysis approach. *Heliyon*, *8*(e11394), 1–8.
Jahanger, A., Usman, M., Murshed, M., Mahmood, H., & Balsalobre-Lorente, D. (2022). The linkages between natural resources, human capital, globalization, economic growth, financial development, and ecological footprint: The moderating role of technological innovations. *Resources Policy*, *76*(102569), 1–18.
KOF (2023). Overall globalization index of Viet Nam. Retrieved July 10, 2023, from https://kof.ethz.ch/en/forecasts-and-indicators/indicators/kof-globalisation-index.html
Li, Y., Pang, D., & Cifuentes-Faura, J. (2023). Time-Varying linkages among financial development, natural resources utility, and globalization for economic recovery in China. *Resources Policy*, *82*(103498), 1–8.
Linh, H. T. D., Duong, N. T., & Hien, H. T. (2023). The Relationship among Exports, Foreign Direct Investment, and Economic Growth in Vietnam-A VAR Approach. *VNU University of Economics and Business*, *3*(2), 11–20.
Minasyan, A., Zenker, J., Klasen, S., & Vollmer, S. (2019). Educational gender gaps and economic growth: A systematic review and meta-regression analysis. *World Development*, *122*, 199–217.
Murshed, M., Apergis, N., Alam, M. S., Khan, U., & Mahmud, S. (2022). The impacts of renewable energy, financial inclusivity, globalization, economic growth, and urbanization on carbon productivity: Evidence from net moderation and mediation effects of energy efficiency gains. *Renewable Energy*, *196*, 824–838.
Nasreen, S., Mahalik, M. K., Shahbaz, M., & Abbas, Q. (2020). How do financial globalization, institutions and economic growth impact financial sector development in European countries? *Research in International Business and Finance*, *54*(101247), 1–25.
Nguyen, C. P. (2021). Gender equality and economic complexity. *Economic Systems*, *45*(100921), 1–16.
Pham, T., & Talavera, O. (2018). Discrimination, social capital, and financial constraints: The case of Viet Nam. *World Development*, *102*, 228–242.
Quy, H. S. (2008). Rethinking of globalization and globalization index of Vietnam among 72 countries in 2007. *Social Sciences Information Review*, *2*(1), 3–18.
Sethi, P., Chakrabarti, D., & Bhattacharjee, S. (2020). Globalization, financial development and economic growth: Perils on the environmental sustainability of an emerging economy. *Journal of Policy Modeling*, *42*(3), 520–535.
Stiglitz, J. (2002). Globalization and its discontents. England: Penguin Books.
Sunde, T. (2017). Foreign direct investment, exports and economic growth: ADRL and causality analysis for South Africa. *Research in International Business and Finance*, *41*, 434–444.
UN Women (2016). Towards gender equality in Viet Nam: making inclusive growth work for women.
UN Women (2021). Country gender equality profile Viet Nam 2021.
UNDP (2018). Briefing note for countries on the 2018 statistical update: Viet Nam.
UNDP (2021). Economic recovery and progress toward the SDGs: Viet Nam in multiple transformations. Ha Noi, April 2021.
UNDP (2023). Gender development index of Viet Nam. Retrieved July 10, 2023, from https://hdr.undp.org/data-center/specific-country-data#/countries/VNM
Van, N. T. C. (2019). Impact of globalization on industrial development in Vietnam: Evidence from time series analysis. *Journal of Economics and Development*, 21, 5–22. DOI: 10.33301/2019.JED.SPI.01.
Vo, T. T, Nguyen, D. A., & Do, T. T. N. (2022). Economic consequences of trade and investment liberalization: The case of Vietnam. Globalization and its economic consequences: Looking at APEC economies. Edited by Shujiro Urata and Ha Thi Thanh Doan. ERIA (2022).
World Bank (2011). Vietnam gender country assessment.
World Bank (2023). World Development Indicators. Exports of goods and services of Viet Nam. Retrieved July 10, 2023, from https://databank.worldbank.org/reports.aspx?source=2&series=NV.AGR.TOTL.ZS&country=#.
World Bank (2023). World Development Indicators. GDP per capita of Viet Nam. Retrieved July 10, 2023, from https://databank.worldbank.org/reports.aspx?source=2&series=NV.AGR.TOTL.ZS&country=#.

Japanese Women's Reproductive Rights and Abortion from the Capability Approach Perspective

Ryohei Kageura

Chiba University of Commerce, Japan

Abstract:

From the philosopher Nussbaum's capability approach perspective, each person has his or her own end and must have capability to pursue that end. Nussbaum also includes reproductive rights as part of "bodily integrity" in the list of capabilities. Reproductive rights refer to the freedom to bear children and the freedom not to bear children. The freedom not to give birth is also considered to consist of multiple freedoms, but this paper will focus on the freedom to have an abortion. The question this paper asks is whether Japanese women can actually have an abortion in the event of an unwanted pregnancy.

The case of a former nursing student (21 years old) from Nishio City, Aichi Prefecture, who was convicted by the Okazaki Branch of the Nagoya District Court in May 2021 shows that Japanese women might lose their capability to have an abortion without the access to the relevant information.

In Japan, the Maternal Protection Act provides the basis for legal abortion. But this law is not a human rights-based law: the interpretation of the Maternal Protection Act regarding the period of legally available abortion is based on the doctors' view and the development of medical technology; the consent of the marriage partner is needed for a married woman, and this serves as a major restriction on a Japanese woman's right to abortion; this law guarantees the doctor's right

Contact Ryohei Kageura: rkageura@cuc.ac.jp

to perform an abortion, not a woman's right to an abortion, and therefore, the doctor has impunity should he refuse to carry out the abortion procedure.

In order to improve this situation, it will be necessary to introduce compulsory education to create a better understanding of the legalities and the rights/obligations of the individual woman. Put simply, the Maternal Protection Act needs to be revised to a human rights-based law.

Keywords: abortion, reproductive rights, capability approach, empowerment, SDGs, Amartya Sen, Martha Nussbaum

1. The capability approach and the problem set for this paper

The capability approach is a field of development economics pioneered by the economist Amartya Sen. According to Sen, capability is a useful concept when comparing the quality of life of individuals and social inequality across countries. It is not a question of how satisfied people are or how many resources are given to them, but of what people can actually do (Sen 1999). The philosopher Martha Nussbaum, who, along with Sen, endorses the capability approach, uses the concept of capability to clarify the minimum level of human rights that should be guaranteed to each individual person rather than differing nations. The fact that a minimum level of capability is advocated implies an ethical message that no situation or environment should be created that allows the level of capability of each person to fall below it. Nussbaum's basic reference is to Kant's ethics (his categorical imperative) which demands that each individual be treated as valuable and as end. She proposes that "a principle of each person as end" be understood as "a principle of each person's capability" (Nussbaum 2000). In other words, Kant's ethics is to be read in such a way that each person has his or her own end and must have capability to pursue that end. Nussbaum's capability approach also has the property of proposing to change the content of basic

goods, which Rawls' Theory of Justice (Rawls 1971) argues should be distributed equally, from resources to capability. The methodological premise of this study is this Nussbaum position. From an economic perspective, it can be acceptable for some utilities to be extremely small in order to maximize utility of society as a whole. However, the capability approach does not allow for the creation of a situation in which the level of capability that supports the pursuit of each individual's ends is below the minimum level, no matter how high the society's overall utility may be. For example, the capability approach's position is that it does not allow for the sacrifice of individual political freedom just because it is for the sake of economic growth.

Since the emergence of the concept of sustainable development, international development assistance has taken the approach of promoting economic growth that leads to the eradication of poverty in the countries it supports. However, the capability approach argues that even if such economic growth is successful, there are problems that cannot be solved immediately. This refers to the lack of individual capabilities. Even if economic growth is achieved and people are given abundant resources, it does not necessarily mean that the individuals living in that society have the capabilities for self-actualization. It is essential for each individual to have the capabilities to design his or her own life according to his or her own end, no matter what the culture or structure of the society is.

The SDGs also introduce not only the perspective of economic growth, but also that of capability approach or individual capacity building, which is essential if the core concept of the SDGs, "Leave No One Behind (LNOB)," is to be realized in any society, regardless of its culture and institutions. In fact, empowerment of each individual is indispensable if we are to realize the core concept of the SDGs, "Leave No One Behind (LNOB)". One of the SDGs that specifically addresses capacity building is the goal on women's empowerment (SDG 5). One of the main issues

in this context is reproductive rights. Nussbaum also includes reproductive rights as part of "bodily integrity" in the list of capabilities. Bodily integrity includes "having opportunities ... for choice in matters of reproduction". Reproductive rights are having the freedom both to bear children and the freedom not to bear children. In this paper, we focus on freedom not to give birth among these two freedoms. The freedom not to give birth is also considered to consist of multiple freedoms, but this paper will focus on the freedom to have an abortion and examine the situation surrounding abortion in Japanese society from the capability approach perspective. In other words, the question this paper asks is whether Japanese women can actually have an abortion if they have an unwanted pregnancy.

This paper focuses on the Maternal Protection Act from this view. Some previous research has already analyzed this law, however, in the context of the introduction of eugenic ideology in Japan's policy making (Hirooka 1980, 1981, 2020; Sugita 2015; Kondo 2012). But little research such as this paper has investigated this law from the perspective of reproductive rights and capability approach.

2. The case of the current situation regarding abortion in Japan

The need to empower women is no different in Japan. Here, we would like to highlight one case that pertains to the current state of reproductive rights in Japan: the case of a former nursing student (21 years old) from Nishio City, Aichi Prefecture, who was convicted by the Okazaki Branch of the Nagoya District Court in May 2021. On her way to school, she experienced a hemorrhage, went into a park restroom, and gave birth to a baby boy. According to her testimony, the baby boy was dead at that time. She then put the boy in a plastic bag and dumped him in a park planting. At trial, she was convicted of abandoning the boy. She testified at trial that she could not

get her partner to sign a consent form for an abortion, so she could not have the procedure. As soon as she found out she was pregnant, she contacted an elementary school classmate, the boy's father, on social media and they agreed to have an abortion. He also promised to sign the abortion consent form requested by the doctor. However, he later cut off contact with her after he was told by his friend that he would be asked to pay for the abortion. The former nursing student was unable to get the consent form signed and had to cancel two of her scheduled surgeries. She asked several other hospitals if she could have the surgery without a consent form, but they would not accept it, and she was forced to try for an unwanted birth after the allowed period for abortion (i.e., up to 21 weeks and 6 days of pregnancy) had passed. The court took these circumstances into consideration and sentenced her to a suspended sentence, albeit a guilty verdict. The sentence was three years in prison, suspended for five years. The five-year suspended sentence means that if she successfully completes five years without a criminal case, she will be exempted from the prison sentence (Yamamoto & Akuzawa 2021).

3. The need to empower Japanese women

In Japan, the Maternal Protection Act provides the basis for legal abortion. The Maternal Protection Act states that when a doctor performs an abortion on a patient, the consent of the patient's partner is required. This is why the hospital asks for the written consent of the partner. However, that partner is the husband and the married partner. Therefore, an unmarried woman does not legally need a consent form and can have an abortion of her own will alone. The former nursing student in this case is an unmarried woman. Therefore, she was continually asked by the hospitals for a consent form that had no legal basis, and she was unable to comply with the request and thus was unable to have an abortion.

She wanted to have an abortion, but she could not do it. Thus, she would have lacked the capacity to have an abortion, which constitutes part of reproductive rights. Why did she lack this capability? Because she lacked the ability to access information about abortion. First, this includes legal knowledge that the Maternal Protection Act does not require consent of the partner from unmarried women; this also includes knowledge of the practice of many hospitals to ask unmarried women for written consent even though there is no legal basis for such a request; this also includes awareness of why support groups exist to help deal with such situations. With legal knowledge, one can fight against the hospitals that wrongfully ask for a consent form, and if this is difficult or if one is unable to overcome the situation on one's own, one can certainly change the attitude of the hospital with the help of support groups. This is the capability of unmarried women to have abortions in Japan. The need to empower women also applies to Japan.

4.1. The period during which abortion is available

From here, we would like to reflect on the nature of Maternal Protection Acts regarding abortion and see how they impede the capability of Japanese women to have abortions. As mentioned earlier, a pregnant woman can have an abortion up to 21 weeks and 6 days of pregnancy. However, in the case of married women, the consent of the husband is required. The above is what the Maternal Protection Act says about abortion. But the "21 weeks and 6 days of pregnancy" is not mentioned in the Maternal Protection Act. It only says, "the time when the fetus cannot continue life outside the mother's body". This phrase is interpreted by doctors as referring to the 21st week and 6th day of pregnancy. As a matter of fact, what this period refers to is based on the medical technology-based view that if a baby is born prematurely, the chance of survival, assuming the use of a ventilator and incubator, increases dramatically after 22 weeks of gestation. The current

situation in Japan is that matters concerning the constraints on the capability of Japanese women are decided not by legislation of a legislative body, but by the views of doctors or by an administrative body (the Ministry of Health, Labor, and Welfare) based on such views. However, this view is by no means unpersuasive. Even in the case of premature birth, the child is already considered to have human rights and the right to exist as an independent person at the time of birth. This is a natural legal conclusion from the fact that infanticide is treated as a type of murder. However, a straightforward reading of this article alone should allow for a different interpretation from that of the technical point of view. For example, it is possible from an interpretive standpoint to use whether or not the fetus becomes able to breathe on its own as a criterion. Thus, it can be pointed out that there is a certain degree of arbitrariness in the interpretation of the Maternal Protection Act regarding the period of abortion availability.

Furthermore, medical technology continues to advance, and if viability based on technology is used as the criterion, it is possible that this period will become earlier and earlier. Researchers succeeded in 2017 in facilitating the normal development of a sheep fetus in a plastic artificial uterus (Matsuoka 2017). When this technology can be applied to humans, the chances of survival of premature infants before 22 weeks gestation will also increase dramatically. If technology advances further, we may see a future in which the fetus is viable outside the mother's body from the fertilized egg stage. At this point, there will no longer be a period in which abortion is possible. The development of technology is further undermining women's capability (in fact, prior to January 1991, abortion was available at less than 24 weeks' gestation). Therefore, rather than basing the decision on technological viability, the revision of the law on the period of abortion availability should be discussed from the rights-based perspective: from what point of time should the fetus be recognized as an independent personality? In addition, the revised Maternal Protection

Act should provide a clear figure for the period of abortion availability. In other words, based on the principle that a restriction on human rights is recognized only when it violates the human rights of others, what should be at issue in a woman's freedom to abort is when the fetus becomes the other, that is, the other personality with human rights. This question should not be left to scientists, but should be the subject of a national debate, and a national consensus on this should be formed.

4.2. Consent of partner

A married woman cannot have an abortion without the consent of her husband. This can serve as a major restriction on a woman's right to abortion. There are many possible situations in marriage. For example, let us suppose that a woman flees domestic violence (DV), separates from her husband, and while both parties are in the middle of divorce proceedings through their lawyers, she discovers that she is pregnant. If she cannot expect him to be able to pay child support on his part, or if her priority is to get a divorce anyway, and it is assumed that she will not be able to raise the child on her own financially, she may consider having an abortion. However, according to the law, even in this situation, abortion requires consent from the husband. In March 2021, the Ministry of Health, Labor and Welfare (MHLW) proposed the view that consent from the husband is not required in cases where the marriage is in a state of substantial breakdown, such as when a woman is subjected to domestic violence. However, there is no mention of such an exception in the text of the Maternal Protection Act. If a woman does as the MHLW says and her domestic violence husband sues for damages against the hospital that performed the surgery, it is difficult to say what kind of ruling will be issued, as there is only one case so far (in a December 5, 2021 ruling by the Naha Branch of the Fukuoka High Court, the doctor's decision was deemed legitimate (Mainichi Shimbun 2022)). There are also many other situations apart from DV regarding the status of

marriage. The consent of the marriage partner is a major restriction on a Japanese woman's right to abortion. Simply put, the Maternal Protection Act permits the partner to violate a woman's right to self-determination over her own body.

Some Japanese men may argue that allowing women to make decisions about abortion alone violates men's rights to their own children, such as parental rights and child support rights, and that there should be consideration for men's human rights. This is an abuse of the rights discourse. As mentioned earlier, a fetus in the mother's body is not considered an independent personality. That is why abortion is not considered infanticide. Not being considered an independent personality means that the fetus at that stage is still recognized as part of the woman's body. Therefore, it is within the woman's right to self-determination, so parental rights and child support rights cannot be applied to a fetus that is only a part of her body. Therefore, it is inappropriate to assert any rights on the part of men with respect to abortion, and such an assertion is a violation of a woman's right to self-determination.

Indeed, the history of the Maternal Protection Act shows that it was not from a human rights perspective that the consent of the husband was made necessary for abortion. This requirement is an outdated leftover from the concept of the Japanese traditional family system. Although the Maternal Protection Act was originally passed in 1948 under the name of the Eugenic Protection Act (the name was changed to "Maternal Protection Act" in 1996), the predecessor to this law was the National Eugenic Act passed in 1940. The provisions regarding abortion in the era of the National Eugenic Act required the consent of the spouse or, if the individual was under 25 years of age, the consent of the parents of the family. This is clearly a requirement based on the assumption that the decision is made as a family. When the Eugenic Protection Act of 1948 was enacted, the latter requirement was removed, and only spousal consent remained. As the name of

the act indicates, abortion in Japan has a history of being legalized in line with eugenic thought, and the rationale for legalizing abortion was that it was a necessary approach to prevent the increase of children with disabilities or genetic disorders (Mitsubayashi & Yamada 2023). The Eugenic Protection Act also included provisions for sterilization. In recent years, victims who were subjected to these operations without their consent have sued the government and have won several lawsuits.

4.3. Abortion is a doctor's right

The Maternal Protection Act guarantees the doctor's right to perform an abortion, not a woman's right to an abortion. A doctor cannot perform an abortion on a woman whose husband has not given consent. A doctor can perform an abortion on a woman whose husband has given consent or on an unmarried woman, but that does not mean that the doctor "must" do so. The doctor is not punished for not performing the abortion procedure. Even if the doctor requires the consent of the partner for an unmarried woman, as in the first case mentioned, it is not illegal. If abortion were a woman's right under the law, then if a doctor refused to perform an abortion, the doctor would be violating the woman's rights. In such a case, the doctor would be charged with illegality. Unless abortion is legalized as a woman's right, it is up to the doctor to decide whether or not to perform an abortion. This would severely restrict the freedom of Japanese women to have abortions.

5. Conclusion

Target 5.6 of the SDGs is "Ensure universal access to sexual and reproductive health and reproductive rights as agreed in accordance with the Programme of Action of the International

Conference on Population and Development and the Beijing Platform for Action and the outcome documents of their review conferences". The target promotes reproductive health and reproductive rights. These rights include both the freedom to bear children if one wants to and the freedom not to bear children if one does not want to. The situation in which this right is violated is when a person wants to have a child but cannot, or when a person does not want to have a child but is forced, against their will, to have a child. This right includes various elements such as sex education, knowledge of sexually transmitted diseases, prevention of environmental pollution, prevention of forced sterilization, prevention of sexual violence, etc. The right to abortion is important in guaranteeing freedom not to give birth and is an important component of reproductive rights.

Can Japanese women actually have an abortion if they have an unwanted pregnancy? As we have seen, two factors hinder Japanese women with regard to their capability to have abortion. One is the lack of access to abortion information. The second is the nature of the Maternal Protection Act, which is not based on human rights. As a result, the achievement of Target 5.6 in Japan is at a low level. In order to improve this situation, it will be necessary to introduce compulsory education in order to create a fuller awareness and understanding of legal knowledge for the empowerment of individual women, and the Maternal Protection Act needs to be revised to a human rights-based law. Specifically, the period during which abortion is available should be determined based on the time when human rights begin to accrue to the fetus, and the period during which abortion is available should be specified in the law. Above all, the law should prioritize women, ahead of doctors, with a clear and unequivocal definition of the rights of child-bearing women.

References:

Hirooka, Kiyoshi (1980), “A Short Essay on the History of Contemporary Population Policy in Japan”, *Journal of Population Studies*, 154 (written in Japanese)

Hirooka, Kiyoshi (1981), “A Short Essay on the History of Contemporary Population Policy in Japan (2)”, *Journal of Population Studies*, 160 (written in Japanese)

Hirooka, Kiyoshi (2020), “A Consideration from the History of Postwar Population Policy in Japan”, *Journal of the Japan Society for Health Sciences*, 86(5) (written in Japanese)

Kondo, Hitomi (2012), “Japanese Ethics in the Eugenics Law”, *7th International Consortium for Japanese Studies “Toward a Multicultural Society”* (written in Japanese)

Mainichi Shimbun (2022), “Abortion without spousal consent ‘no negligence on the part of doctors,’ Fukuoka High Court branch dismisses appeal,” *Mainichi Shimbun*, December 5, 2022, https://mainichi.jp/articles/20221205/k00/00m/040/150000c

Matsuoka, Yukiko (2017), “Plastic ‘artificial womb’ allows sheep babies to develop normally,” *Newsweek Japan*, April 28, 2017, https://www.newsweekjapan.jp/stories/world/2017/04/post-7517.php

Mitsubayashi, Hiromi & Yamada, Hiroshi (2023), “Investigation Report Based on Article 21 of the Law Concerning Lump-Sum Payment to Persons Who Underwent Eugenic Surgery, etc. Based on the Former Eugenic Protection Act”, Health, Labor and Welfare Committee, House of Representatives & Health, Labor and Welfare Committee, House of Councilors.

Nussbaum, Martha C. (2000), *WOMEN AND HUMAN DEVELOPMENT: The Capabilities Approach*, Cambridge: Cambridge University Press.

Rawls, John (1971), *A Theory of Justice*, Cambridge, MA: Harvard University Press.

Sen, Amartya (1999), *Development as Freedom*, Oxford: Oxford University Press.

Sugita, Naho (2015), “The Development of the Concept of Population Qualities and Social Policy in Japan: From Prewar to Postwar”, *Journal of Economics*, Vol. 116, No. 2, Osaka City University Economic Association (written in Japanese)

Yamamoto, Chika and Akuzawa, Etsuko (2021), “‘I cannot get my partner’s consent...’ Anguished pregnant women, the reality of abortion”, *Asahi Shimbun Digital*, June 13, 2021, https://www.asahi.com/articles/ASP6B74N8P63OIPE002. html

FACTORS INFLUENCING ACTUAL BEHAVIOR TOWARD WASTE SEPARATION AT VIETNAMESE HIGHER EDUCATION

Vu Thi Thanh Binh, Nguyen Thi Hong Thuy, Dang Thu Hang

Vietnam National University – University of Economics and Business, Hanoi, Vietnam

Abstract:

The environment has become a significant focal concern in contemporary society, prompting increased efforts to address ecological challenges. Environmental education fosters awareness, behaviors, and actions towards environmental conservation and sustainability. This study examines factors influencing actual behavior to separate waste based on the Theory of Planned Behavior (TPB). The study gathered 516 respondents and used 490 valid responses from students in Vietnamese higher education. The research employed a quantitative approach to investigate the effect of four factors: attitude, subjective norm, perceived behavior control, and environmental education. The findings show that attitude, subjective norms, perceived behavior control of students, and environmental education have a positive influence on students' actual behavior to separate waste. Environmental education has the most significant effect on student behavior toward waste separation. This study contributes to the growing body of evidence reinforcing environmental education's role in improving the intention to address environmental issues. The results imply that implementing environmental education activities is beneficial for enhancing environmental behavior among students in higher education in the Vietnamese context.

Keywords: Environmental behavior, environmental education, university, TPB, waste separation.

Contact Vu Thi Thanh Binh: vttbinh@vnu.edu.vn

1. Introduction

Waste separation plays a crucial role in environmental sustainability by reducing pollution, conserving natural resources, and promoting a circular economy. Waste separation is one of the environmental protection actions, alongside recycling, reuse, and so on, which are gaining significant attention from various stakeholders. As global environmental challenges intensify, pro-environmental behaviors such as waste separation, recycling, and resource conservation have gained increasing attention from policymakers and researchers (Boca & Saraçlı, 2019). The implementation of effective waste management practices contributes to sustainable development goals by minimizing environmental degradation and enhancing public health (Liao & Li, 2019). Higher education institutions are pivotal in fostering environmental awareness and sustainable behaviors, as they cultivate future generations of environmentally responsible citizens (Kollmuss & Agyeman, 2002). Particularly in Vietnam, where rapid urbanization and economic growth have led to escalating waste generation, environmental education has become an essential strategy to promote sustainable waste management behaviors among students and communities (Nhi Nguyen, 2023) and many environmental activities have been carried out at higher education (Binh, Thuy, & Hang, 2025).

Environmental education aims to enhance individuals' understanding of ecological issues, problem-solving skills, and decision-making processes related to sustainability. Studies suggest that environmental education can positively influence environmental attitudes, fostering a greater sense of responsibility and engagement in sustainable actions (Ardoin, Bowers, & Gaillard, 2020; McGuire, 2015). The provision of environmental education by higher education institutions significantly influences the training and readiness of the next generation for a sustainable society (Lundy, Reynolds, & Auton-Smith, 2022). However, despite the increasing availability of

environmental knowledge, a gap often exists between awareness and actual pro-environmental behavior, known as the attitude-behavior gap (Kaiser & Byrka, 2011). Factors affecting actual behavior of higher education students toward waste separation include convenience, accessibility to waste separation facilities, habit formation, and social influences (Kaiser & Byrka, 2011; Nigbur, Lyons, & Uzzell, 2010), experiences of pride (Bissing-Olson, Fielding, & Iyer, 2016). Previous results highlight that providing adequate infrastructure, such as clearly labeled bins and convenient disposal locations, significantly enhances waste separation behavior (Schultz, Oskamp, & Mainieri, 1995). Additionally, peer influence and institutional support play a crucial role in reinforcing sustainable habits among students (Gifford & Nilsson, 2014). In Vietnam, Binh et al. (2025) indicated the roles of environmental education combining the TPB factors in enhancing student's intention to waste separation, but not figure out the determinants of actual behavior toward environmental activities of students.

This research postulates a model to test the factors affecting actual behavior to sepate waste at university campus, including attitude, subjective norm, perceived behavioral control, and environmental education of students. By investigating these determinants, the study contributes to the growing body of evidence that underscores the importance of environmental education as well as individual' trait factors in shaping students' environmental behaviors through their actual behaviors. The findings will provide valuable insights for universities in Vietnam to enhance their environmental education initiatives and develop effective strategies to integrate sustainability into their academic curricula.

2. Literature Review

2.1. Environmental education

UNESCO (1977) defines environmental education as:

"*A learning process that increases people's knowledge and awareness about the environment and its associated challenges, develops the necessary skills and expertise to address the challenges, and fosters attitudes, motivations, and commitments to make informed decisions and take responsible action*" [Page 19].

Environmental education is a continuous and lifelong process that should extend beyond the confines of formal education systems. The integration of environmental education with other educational domains, particularly workplace education for students, factory and field workers, and consumers within their respective environments, as well as its alignment with economic development education, is of critical importance. This integration necessitates the incorporation of environmental topics across both formal and non-formal education programs, ensuring a cohesive and uninterrupted learning process in which all essential phases are systematically addressed (UNESCO, 1977). Venkataraman (2008) stated that the concept and content of environmental education must be embeded into all educational system levels.

Numerous scholars and organizations worldwide have emphasized the essential role of environmental education in fostering sustainable development. Environmental education equips individuals with the knowledge and skills necessary to make informed decisions and engage in environmentally responsible actions (Heimlich & Ardoin, 2008; Tilbury, 1995) (Heimlich & Ardoin, 2008; Tilbury, 1995). Recognizing its importance, various stakeholders have integrated environmental education into formal curricula, workplace training, and community programs to enhance public awareness and engagement in environmental protection efforts (Herman, Garcia-Alonso, Layton, & Raybould, 2013; May, 2000). Environmental education highlights the interrelationship between knowledge, attitudes, and competencies in shaping environmental

consciousness. Through well-structured educational programs, the foundational principles of sustainability can be effectively instilled (Zsóka, Szerényi, Széchy, & Kocsis, 2013). Environmental education aims to enable individuals and communities to comprehend the intricate characteristics of the natural and built environments that arise from the interplay of their biological, physical, social, economic, and cultural elements. It also encourages the acquisition of knowledge, values, attitudes, and practical skills necessary for responsible and effective participation in predicting and resolving environmental issues, as well as in managing environmental quality (EPA, 2024; UNESCO, 1977).

2.2. Previous research in environmental education

The topic of EE has gained increasing importance in educational research internationally, especially in developing countries. Previous research in environmental education has explored the relationship between environmental knowledge, awareness, attitudes, and behaviors. Riordan and Klein (2010) surveyed students to determine their behavioral reactions toward environmental concerns, which is a significant field of study. The motivation generated by this research is evident in the behaviors of students willing to participate in discussions about their learning with researchers and in their behaviors that demonstrate a transition from problem-solving and critical thinking to behavioral regulation. Significant disagreement is present in the literature over including environmental education (EE) within the framework of education for sustainable development. Liao and Li (2019) collected 526 responses. The results showed that most behavioral intentions towards environmental protection stemmed from the knowledge they acquired and their awareness through environmental education. However, the research has limitations that need to be addressed in future research, such as the sample being limited to high school students and the

limited scope of the research. In future research, it would be interesting to measure objective knowledge and subjective knowledge separately to investigate their relationship with attitudes and intentions, using the collected data to improve environmental protection education and promote actions for the environment. Boca and Saraçlı (2019) obtained 358 samples from a survey conducted at the North University Centre Baia Mare. Their assessment of students' environmental knowledge, awareness, attitudes, and behaviors across several academic disciplines was conducted using a 7-point Likert scale. Their results showed that there was no meaningful variation in students' view of the significance of environmental education depending on their academic field. The results of the correlation study indicated a positive association among the variables of awareness, behavior, and attitude. Nevertheless, the study's exclusivity to one university restricts the applicability of the results.

2.3. Theory of Planned Behavior in environmental education toward environmental issues

The TPB is a psychological framework that explains how individual attitudes, subjective standards, and perceived behavior control influence intentions and behavior. In environmental education, this theory can provide valuable insights into how educational initiatives can effectively promote environmentally friendly behavior. According to the theory of planned behavior (Ajzen, 1991), behaviors are influenced by intentions, which are determined by three factors: attitudes, subjective norms, and perceived behavioral control. It is also possible for external factors to directly force or prevent behaviors, regardless of the intention, depending on the degree to which the individual controls behavior and the degree to which perceived behavioral control is an accurate measure of actual behavioral control.

Attitude reflects an individual's emotional response toward a person, object, or behavior,

particularly those related to the environment, with such emotions varying from positive to negative depending on personal perception (Newhouse, 1990). Attitude is an essential factor in TPB; people's attitudes toward environmental activities will have an impact on their intentions and behaviors toward participating in environmental activities. Attitude toward waste separation in university campus is as a psychological tendency expressed by evaluating the natural environment with a degree of favorability or disfavorability. Attitude has an indirect influence on environmental protection behavior through behavioral intention (Ajzen, 1991; Ajzen & Fishbein, 1980), so students' environmental attitude can be considered an important factor for predicting environmental protection behavior that is preceded by an intention, decision to protect the environment (Berger & Corbin, 1992; Ellen, Wiener, & Cobb-Walgren, 1991). Karim et al. (2021), Zhang et al. (2021), and Binh et al. (2025) show that attitude is the strongest predictor of environmental protection intention and behavior. The hypothesis is given as:

Hypothesis H_1: Attitude towards the environment positively influence the actual behavior of students to separate waste.

Regarding the theory of reasoned action and TPB, students' intentions depend not only on their attitudes toward the environment but also on the beliefs and behaviors of others (Deutsch & Gerard, 1955; Fishbein & Ajzen, 1975; Rimal & Real, 2003). Subjective norms are considered an individual's perception of what they should do (Fishbein & Ajzen, 1975). Subjective norms are a function of two factors: belief in the influence of those around them on what they should do and the motivation to follow those around them (Vallerand & Blssonnette, 1992). Subjective norm refers to an individual's perception of the attitudes and behaviors of others in society (Rivis & Sheeran, 2003). Subjective norms can also be understood as social influence, reflecting the pressure that individuals perceive from the judgments of others about whether a behavior should

be performed or not. Subjective norms are believed to influence consumption intentions (Rimal & Real, 2003). Rivis and Sheeran (2003) showed that subjective norms are a social factor in the TPB model. Cialdini, Reno, and Kallgren (1990) argued that subjective norm is a factor that reflects the level of an individual's awareness of the behavior of others based on that individual's observations of the behavior of others in specific situations (Cialdini et al., 1990). Subjective norms clearly impact intentions and behaviors regarding environmental protection (Bissing-Olson et al., 2016; Liao & Li, 2019). The hypothesis is given as:

Hypothesis H_2: Subjective norms positively influence the actual behavior of students to separate waste.

Perceived behavioral control is the perceived ability of an individual to perform a behavior or an individual's feeling of how difficult or easy it is to perform a specific behavior (Ajzen, 2002). Perceived behavioral control indicates the level of control over performing the behavior, not the outcome of the behavior (Beck & Ajzen, 1991). Perceived behavioral control includes both perceived ability and perceived control over the situation. In the context of the alarming environmental pollution today, the world is joining hands to take action for the environment, including producing and calling for environmentally friendly products, maintaining many "green" projects, etc. Perceived behavioral control describes people's perception of how easily they can act together with society to protect the environment, and it impacts their intention and actual behavior to engage in environmental activities (Boca & Saraçlı, 2019; Liao & Li, 2019). The following hypothesis is proposed:

Hypothesis H_3: Perceived behavioral control positively influence the actual behavior of students to separate waste.

Environmental education equips a deep understanding of social-environmental issues and

problem-solving and decision-making processes. This is achieved by teaching ecological relationships and principles that underpin these issues and pointing out alternative approaches and solutions (Bogan, 1973). Environmental education as a process used to create a citizen capable of making sound decisions and acting on these decisions that are environmental and personal sustainability (Heimlich & Ardoin, 2008). Environmental education enables the development of a global community that is aware of and concerned about the environment and related issues and has the knowledge, skills, attitudes, motivation, and commitment to work individually and collectively toward solutions to current problems (UNESCO, 1977). Zsóka et al. (2013) argue that environmental knowledge is one of the main predictors of environmental behavior. Environmental education considers the formation of environmentally friendly intentions and behaviors. However, recent studies have shown that environmental education is more critical to forming environmental attitudes than achieving behavioral achievements. Teaching environmental education enhances student perception of environmental behavior (Boca & Saraçlı, 2019), and extracurricular activities can also equip students with intention in waste separation (Binh et al., 2025). Based on these conclusions, we propose the following hypotheses:

Hypothesis H_4: Environmental education positively influence the actual behavior of students to separate waste.

3. Methodology

Variable Measurement

This research adopted measurements from a previous study by Liao and Li (2019), which included 16 items for five variable constructs. The dependent variable is the actual behavior in waste separation in the university campus, which includes two items from BEHA1 to BEHA2. The

independent variables are attitude towards environment, subjective norm, perceived behavior control, and environmental education. As Chang, Van Witteloostuijn, and Eden (2010) mentioned, common method variance is related to the measurement method, so the researchers must be concerned about designing the questionnaire during the data collection. This research used the Likert 7-point for actual behavior and the Likert 5-point for independent variables and reversed two items, ATT1 and PBC1, to reduce common method variance.

Table 1. Variables measurement

Variables		Measurement
Actual behavior in separating waste	BEHA1	I usually separate all recyclable materials
	BEHA2	I regularly recycle certain parts of the campus waste by putting them in the recycling bins.
Environmental education	EDU1	My school incorporate information about environmental protection into courses.
	EDU2	I am specialized in environmental issues.
	EDU3	Knowledge gained through environmental education helps to solve environmental problems.
	EDU4	I have studied environmental subjects in school.
Attitude	ATT1*	Separation of solid waste at school is a waste of time
	ATT2	Separation of solid waste at school is sensible
	ATT3	Separation of solid waste at school is hygienic.
	ATT4	Separation of solid waste at school is responsible
Subjective norm	SN1	Most of my friends think that waste separation is a good thing to do.
	SN2	My family members think that I should separate the campus waste.
	SN3	My classmates think that I should be involved in waste separation in school.
Perceived Behavior Control	PBC1*	Recycling my campus waste is inconvenient
	PBC2	Waste separation is easy to conduct.
	PBC3	The school provides adequate facilities (bins and cans) for waste separation.

** Reversed item*

Data Collection

The study collected primary data to solve research objectives. Primary data was collected through student surveys at HEs. The study used an online questionnaire that included two parts. The first part of the questionnaire was about the characteristics of respondents, while the second

part focused on indicating opinions about variables. The online questionnaire was sent to students via Zalo and Facebook groups. Zalo and Facebook are two communication channels for youth, such as students in Vietnam. Especially after the COVID-19 pandemic, some universities have used Zalo and Facebook as quick learner feedback and promotion channels to engage students (Giap, Vu, Tran, & Nguyen, 2022). The study gathered 516 respondents; however, there were several responses with only one point on a 5-point and 7-point Likert scale. We used Excel to pre-process data, find low-quality responses, and eliminate them. At the final stage, the study obtained 490 valid responses, account for 95% of responses, from students at universities in Northern Vietnam.

Data Analysis

This research used descriptive statistics and multiple regression with the support of the SPSS 22 software. The descriptive statistics aimed to illustrate the demographics of data. And multiple regression was to test the primary data collected from student surveys about determinants of the actual behavior to separate waste in HEs campus.

4. Results and Discussion

4.1. The descriptive statistic results

The research collected data from students in North Vietnam. The demographics of respondents are depicted in **Table 2**.

Table 2. Statistics of demographic respondents

Major	**%**	**Gender**	**%**
Economics, Business, Management	41%	Male	39%
Languages, Pedagogy	12%	Female	58%
Chemical Technology, Environment	2%	Others	3%
Agriculture, Biotechnology	2%	**Student year**	
Computer Science	6%	1-year student	12%

Culture, Arts, Humanities	13%	2-year student	18%
Engineering, Mechanics, Materials Science	10%	3-year student	51%
Biomedical, Pharmacy, Health Sciences	6%	4-year student	17%
Other majors	8%	5-year student	2%

(Source: Summary of authors)

As can be seen in Table 2 that the research sample is distributed to a wide range of majors. This demonstrates the convenience of online surveys, helping to collect a variety of survey participants. Students majoring in economics, business, and management account for a large proportion of this study, 41%. The proportion of female students participating in the study is higher than that of male students, accounting for 58%. Third-year students account for the highest proportion compared to students in the remaining years, accounting for 51%.

The study performed descriptive statistics for research variables. The result is summarized in **Table 3**.

Table 3. The results of descriptive statistics

	N	Minimum	Maximum	Mean	Std. Deviation
BEHA1	490	1	7	5.51	1.464
BEHA2	490	1	7	5.42	1.480
EDU1	490	1	5	4.17	.886
EDU2	490	1	5	3.93	.984
EDU3	490	1	5	4.05	.891
EDU4	490	1	5	3.97	.956
ATT1	490	1	5	4.09	1.189
ATT2	490	1	5	4.26	.871
ATT3	490	1	5	4.14	.875
ATT4	490	1	5	4.25	.878
SN1	490	1	5	4.03	.926
SN2	490	1	5	3.95	.964
SN3	490	1	5	3.92	.962
PB1	490	1	5	3.76	1.235
PB2	490	1	5	3.76	1.029
PB3	490	1	5	3.81	1.032

The results in Table 3 show descriptive statistics of the research variables including mean, minimum, maximum, and standard deviation of the research variables with a sample of 490 respondents from students.

4.2. The results of multivariate regression analysis

The reliability test and exploratory factor analysis (EFA) are used to test measurement quality. Table 4 summarizes the results of the measurement quality testing.

Table 4. Summary of reliability test and EFA results

Variables	Cronbach Alpha	EFA Results	Latent Variable ID
Actual behavior in separating waste	.799	KMO = .500 Bartlett test = 285.488 Sig. = .000	BEHA
Attitude	.744	KMO = .875 Bartlett test = 2644.280 Sig. = .000	ATT
Subjective norm	.795		NORM
Perceived behavior control	.674		PBC
Environmental education	.785		EDU

The reliability test results in Table 4 show that Cronbach alpha values are greater than 0.6 and less than 0.9. As can be seen, all measurements meet the requirement of reliability threshold, and Cronbach alpha coefficients are greater than 0.6 (Nguyen, 2013).

The EFA results with varimax rotation are performed separately for independent and dependent variables. The results of EFA in Table 4 have a KMO coefficient greater than 0.5, and the reliability of Bartlett's test is equal to 0.000, indicating that the research data is consistent with the proposed model. Regarding the independent variables, four independent variables are loaded, and the research calculates the representative variables, including NORM, ATT, PBC, and EDU, by calculating the mean value. The dependent variable loads one variable named BEHA.

Correlation and multiple regression analysis were used to test hypotheses. The result of the correlation analysis is depicted in Table 5.

Table 5. The correlation analysis results

		NORM	ATT	PBC	EDU	BEHA
NORM	Pearson Correlation	1	.478**	.435**	.540**	.452**
	Sig. (2-tailed)		.000	.000	.000	.000
	N	490	490	490	490	490
ATT	Pearson Correlation	.478**	1	.311**	.501**	.389**
	Sig. (2-tailed)	.000		.000	.000	.000
	N	490	490	490	490	490
PBC	Pearson Correlation	.435**	.311**	1	.485**	.540**
	Sig. (2-tailed)	.000	.000		.000	.000
	N	490	490	490	490	490
EDU	Pearson Correlation	.540**	.501**	.485**	1	.556**
	Sig. (2-tailed)	.000	.000	.000		.000
	N	490	490	490	490	490
BEHA	Pearson Correlation	.452**	.389**	.540**	.556**	1
	Sig. (2-tailed)	.000	.000	.000	.000	
	N	490	490	490	490	490

**. *Correlation is significant at the 0.01 level (2-tailed).*

The results in Table 5 reveal a significant correlation between the independent variables and dependent variables, with sig. = .000.

Table 6 summarizes the results of the multiple regression. Regarding the results in the model summary, the R-Square coefficient is 0.442 which means 44.2% of the variation in the dependent variable, the actual behavior to separate waste on university campuses, is explained by four independent variables in the research model, including environmental education at universities, subjective norm, attitudes, and perceived behavioral control of students.

Table 6. The multiple regression results

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.649[a]	.422	.417	1.02594	1.565

a. Predictors: (Constant), PBC, ATT, NORM, EDU

b. Dependent Variable: BEHA

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	372.420	4	93.105	88.456	.000[b]
	Residual	510.490	485	1.053		
	Total	882.910	489			

a. Dependent Variable: BEHA

b. Predictors: (Constant), PBC, ATT, NORM, EDU

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients			Collinearity Statistics	
		B	Std. Error	Beta	t	Sig.	Tolerance	VIF
1	(Constant)	.042	.318		.132	.895		
	ATT	.163	.077	.088	2.116	.035	.688	1.453
	SN	.184	.074	.110	2.504	.013	.620	1.614
	PBC	.474	.060	.321	7.901	.000	.722	1.384
	EDU	.549	.085	.296	6.495	.000	.572	1.747

a. Dependent Variable: BEHA

Regarding the ANOVA table, the F test evaluates the regression model. The F value is 88.456 with sig. 0.000 < 0.05, revealing that the regression model is appropriate for the whole population. The results in coefficients, including environmental, attitude, subjective norm, and perceived behavior control, are less than 0.05 and 0.1. With the significance level of 5% and 10%, These results confirm that four independent variables, subjective norms, attitudes, perceived behavioral control, and environmental education, statistically influence the dependent variable of waste separation behavior (BEHA).

Among these factors, environmental education (EDU) demonstrates the greatest effect, as evidenced by its highest standardized coefficient ($\beta = 0.296$, $p < 0.001$). This result suggests that individuals with greater exposure to environmental education are more likely to engage in proper waste separation practices. Regarding environmental education in Vietnam, numerous environmental training programs in Vietnamese universities provide students with knowledge, skill and attitude about environmental issues (Binh et al., 2025), so environmental education do not only influence behavior intention but also impact actual behavior of students. The intracurricular and extracurricular environmental activities for students at some universities contribute to the student behavior. The results clearly highlight environmental education as the most influential factor in promoting actual waste separation behavior. Education enhances

individuals' awareness of environmental issues, improves their understanding of proper waste separation techniques, and fosters a strong sense of responsibility toward sustainable waste management. This aligns with previous studies, such as Boca and Saraçlı (2019), emphasizing the long-term impact of environmental education in shaping eco-friendly behaviors.

TPB factors relating to individual, such as subjective norm, attitudes, and perceived behavioral control also have a positive influence on students' behavior about environmental activities. Perceived behavioral control (PBC) also plays a crucial role, with $\beta = 0.321$ and $p < 0.001$, indicating that individuals are more likely to separate waste when they perceive they have the necessary control and resources to do so. While perceived behavioral control also exerts a significant influence, education plays a critical role in strengthening an individual's perceived control over waste separation. Knowledge gained through education can reduce uncertainties and provide individuals with practical skills, thereby increasing their confidence in adopting waste separation practices.

Subjective norm ($\beta = 0.110$, $p = 0.013$) and student attitude ($\beta = 0.088$, $p = 0.035$) contribute positively as well, reinforcing the idea that a favorable attitude and perceived social pressure influence behavior. However, their effects are weaker compared to environmental education and perceived behavioral control, highlighting the necessity of strong educational foundations and supportive environmental conditions. This suggests that while attitudes and social influences matter, they are less impactful than education and perceived control. Nevertheless, educational initiatives can indirectly enhance these factors by fostering positive environmental attitudes and establishing stronger social norms around waste separation.

Based on these findings, the research has some policy implications. Firstly, there is a need to strengthen environmental education in higher education. Waste management education should

be systematically integrated into school curricula at all levels. Interactive learning approaches, such as project-based activities and field visits to recycling facilities, should be incorporated to enhance student engagement. And universities should offer specialized courses and research opportunities on sustainable waste management for their students. Secondly, there is a necessity in enhancing public awareness and community engagement, because social norms enhance the environmental behavior of students. National and local governments should conduct public awareness campaigns emphasizing the importance of waste separation. Furthermore, community-based waste management programs, such as neighborhood recycling initiatives and eco-friendly competitions, should be encouraged. Thirdly, higher education institutions need to improve waste management infrastructure and supportive policies. Municipalities should ensure the availability of well-labeled waste bins in public spaces, schools, and workplaces. Training programs should be developed for teachers, community leaders, and municipal workers to equip them with the knowledge and tools necessary to advocate waste separation.

5. Conclusion

Environmental education is a global concern that indicates the role of higher education. The regression analysis confirms that education plays the most crucial role in promoting actual waste separation behavior, followed by perceived behavioral control, subjective norms, and attitude. These findings underscore the need for comprehensive environmental education programs and supportive policies to enhance public engagement in sustainable waste management. By integrating waste separation education into formal and informal learning environments and improving infrastructure, policymakers and educational institutions can effectively foster long-term environmental responsibility. From there, the study proposes a number of implications to help

promote environmental education at higher education institutions.

References:

Ajzen, I. (1991). The theory of planned behavior. *Organizational behavior and human decision processes, 50*(2), 179-211. doi:https://doi.org/10.1016/0749-5978(91)90020-T

Ajzen, I. (2002). Perceived behavioral control, self-efficacy, locus of control, and the theory of planned behavior 1. *Journal of applied social psychology, 32*(4), 665-683. doi:https://doi.org/10.1111/j.1559-1816.2002.tb00236.x

Ajzen, I., & Fishbein, M. (1980). *Understanding attitudes and predicting social behavior*. Englewood Cliffs, NJ: Prentice-Hall.

Ardoin, N. M., Bowers, A. W., & Gaillard, E. (2020). Environmental education outcomes for conservation: A systematic review. *Biological conservation, 241*, 108224. doi:https://doi.org/10.1016/j.biocon.2019.108224

Beck, L., & Ajzen, I. (1991). Predicting dishonest actions using the theory of planned behavior. *Journal of research in personality, 25*(3), 285-301. doi:https://doi.org/10.1016/0092-6566(91)90021-H

Berger, I. E., & Corbin, R. M. (1992). Perceived consumer effectiveness and faith in others as moderators of environmentally responsible behaviors. *Journal of public policy & marketing, 11*(2), 79-89. doi:https://doi.org/10.1177/074391569201100208

Binh, V. T. T., Thuy, N. T. H., & Hang, D. T. (2025). Environmental Education and its Role in Enhancing Intention to Separate Waste: Evidence from Higher Education in Vietnam. *Salud, Ciencia y Tecnología-Serie de Conferencias*(4), 1346. doi:https://doi.org/10.56294/sctconf20251346

Bissing-Olson, M. J., Fielding, K. S., & Iyer, A. (2016). Experiences of pride, not guilt, predict pro-environmental behavior when pro-environmental descriptive norms are more positive. *Journal of Environmental Psychology, 45*, 145-153.

Boca, G. D., & Saraçlı, S. (2019). Environmental education and student's perception, for sustainability. *Sustainability, 11*(6), 1553.

Bogan, W. J. (1973). Environmental education redefined. *The Journal of Environmental Education, 4*(4), 1-3. doi:https://doi.org/10.1080/00958964.1973.10801755

Chang, S. J., Van Witteloostuijn, A., & Eden, L. (2010). From the Editors: Common method variance in international business research. *Journal of International Business Studies, 41*(2), 178–184. doi:https://doi.org/10.1007/978-3-030-22113-3_20

Cialdini, R. B., Reno, R. R., & Kallgren, C. A. (1990). A focus theory of normative conduct: Recycling the concept of norms to reduce littering in public places. *Journal of personality and social psychology, 58*(6), 1015.

Deutsch, M., & Gerard, H. B. (1955). A study of normative and informational social influences upon individual judgment. *The journal of abnormal and social psychology, 51*(3), 629. doi:https://doi.org/10.1037/h0046408

Ellen, P. S., Wiener, J. L., & Cobb-Walgren, C. (1991). The role of perceived consumer effectiveness in motivating environmentally conscious behaviors. *Journal of public policy & marketing, 10*(2), 102-117. doi:https://doi.org/10.1177/0743915691010002

EPA. (2024, July 2, 2024). What is Environmental Education? Retrieved from https://www.epa.gov/education/what-environmental-education#:~:text=Environmental%20education%20is%20a%20process,make%20informed%20and%20responsible%20decisions.

Fishbein, M., & Ajzen, I. (1975). *Belief, attitude, intention and behavior: An introduction to theory and research*. Addison-Wesley: Reading, MA.

Giap, H. T., Vu, B. T. T., Tran, Q. T., & Nguyen, H. H. (2022). Learners' Perceived Self-Efficacy, Engagement, and Satisfaction in Online Learning of Accounting and Auditing University Students. *Vietnam Journal of Education, 6*(2), 179-186. doi:https://doi.org/10.52296/vje.2022.200

Gifford, R., & Nilsson, A. (2014). Personal and social factors that influence pro-environmental concern and behaviour: A review. *International journal of psychology, 49*(3), 141-157.

Heimlich, J. E., & Ardoin, N. M. (2008). Understanding behavior to understand behavior change: A literature review. *Environmental education research, 14*(3), 215-237. doi:https://doi.org/10.1080/13504620802148881

Herman, R. A., Garcia-Alonso, M., Layton, R., & Raybould, A. (2013). Bringing policy relevance and scientific discipline to environmental risk assessment for genetically modified crops. *Trends in biotechnology, 31*(9), 493-496.

Kaiser, F. G., & Byrka, K. (2011). Environmentalism as a trait: Gauging people's prosocial personality in terms of environmental engagement. *International journal of psychology, 46*(1), 71-79. doi:https://doi.org/10.1080/00207594.2010.516830

Karim, R. A., Rahayu, A., Mahmud, N., Monoarfa, H., Bahtar, A. Z., Nazari, Z. A., & Adirestuty, F. (2021). *An application of TAM model towards influencing online purchase intention during Covid-19 pandemic for fresh agricultural products: A preliminary findings.* Paper presented at the AIP Conference Proceedings.

Kollmuss, A., & Agyeman, J. (2002). Mind the gap: why do people act environmentally and what are the barriers to pro-environmental behavior? *Environmental education research, 8*(3), 239-260. doi:https://doi.org/10.1080/13504620220145401

Liao, C., & Li, H. (2019). Environmental education, knowledge, and high school students' intention toward separation of solid waste on campus. *International journal of environmental research and public health, 16*(9), 1659. doi:https://doi.org/10.3390/ijerph16091659

Lundy, K., Reynolds, S., & Auton-Smith, S. (2022). *ESG in higher education: From strategy to execution*. Retrieved from https://www.ey.com/en_us/insights/education/esg-in-higher-education-a-focus-on-the-environment

May, T. S. (2000). Elements of success in environmental education through practitioner eyes. *The Journal of Environmental Education, 31*(3), 4-11. doi:https://doi.org/10.1080/00958960009598639

McGuire, N. M. (2015). Environmental education and behavioral change: An identity-based environmental education model. *International Journal of Environmental and Science Education, 10*(5), 695-715.

Newhouse, N. (1990). Implications of attitude and behavior research for environmental conservation. *The Journal of Environmental Education, 22*(1), 26-32. doi:https://doi.org/10.1080/00958964.1990.9943043

Nguyen, D. T. (2013). *Giáo trình phương pháp nghiên cứu khoa học trong kinh doanh [Research method in business]*. University of Economics HCMC: Financial Publishing.

Nhi Nguyen (Producer). (2023, 11/2/2025). Turning Challenges into Opportunities: Investing in Waste Disposal Management in Vietnam. Retrieved from https://www.vietnam-briefing.com/news/turning-challenges-into-opportunities-investing-in-waste-disposal-management-in-vietnam.html/

Nigbur, D., Lyons, E., & Uzzell, D. (2010). Attitudes, norms, identity and environmental behaviour: Using an expanded theory of planned behaviour to predict participation in a kerbside recycling programme. *British journal of social psychology, 49*(2), 259-284. doi:https://doi.org/10.1348/014466609X449395

Rimal, R. N., & Real, K. (2003). Understanding the influence of perceived norms on behaviors. *Communication Theory, 13*(2), 184-203. doi:https://doi.org/10.1111/j.1468-2885.2003.tb00288.x

Riordan, M., & Klein, E. J. (2010). Environmental education in action: How expeditionary learning schools support classroom teachers in tackling issues of sustainability. *Teacher education quarterly, 37*(4), 119-137. doi:https://www.jstor.org/stable/23479463

Rivis, A., & Sheeran, P. (2003). Descriptive norms as an additional predictor in the theory of planned behaviour: A meta-analysis. *Current psychology, 22*, 218-233. doi:https://doi.org/10.1007/s12144-003-1018-2

Schultz, P. W., Oskamp, S., & Mainieri, T. (1995). Who recycles and when? A review of personal and situational factors. *Journal of Environmental Psychology, 15*(2), 105-121. doi:https://doi.org/10.1016/0272-4944(95)90019-5

Tilbury, D. (1995). Environmental education for sustainability: Defining the new focus of environmental education in the 1990s. *Environmental education research, 1*(2), 195-212. doi:https://doi.org/10.1080/1350462950010206

UNESCO. (1977). *Intergovernmental Conference on Environmental Education*. Retrieved from https://unesdoc.unesco.org/ark:/48223/pf0000032763

Vallerand, R. J., & Blssonnette, R. (1992). Intrinsic, extrinsic, and amotivational styles as predictors of behavior: A prospective study. *Journal of personality, 60*(3), 599-620.

Venkataraman, B. (2008). Why environmental education? *Environment: Science and policy for sustainable development, 50*(5), 8-11. doi:https://doi.org/10.3200/ENVT.50.5.8-11

Zhang, S., Hu, D., Lin, T., Li, W., Zhao, R., Yang, H., . . . Jiang, L. (2021). Determinants affecting residents' waste classification intention and behavior: A study based on TPB and ABC methodology. *Journal of Environmental Management, 290*, 112591.

Zsóka, Á., Szerényi, Z. M., Széchy, A., & Kocsis, T. (2013). Greening due to environmental education? Environmental knowledge, attitudes, consumer behavior and everyday pro-environmental activities of Hungarian high school and university students. *Journal of cleaner production, 48*, 126-138. doi:https://doi.org/10.1016/j.jclepro.2012.11.030

The impact of ODA on the green economy in ASEAN 5 countries

Le Quang Minh

Vietnam National University – University of Economics and Business, Vietnam

Abstract:

This study investigates the impact of Official Development Assistance (ODA) on the green economy in the ASEAN 5 countries (Vietnam, Thailand, Malaysia, Indonesia, and the Philippines) from 2005 to 2020. Utilizing a panel data regression model, the research analyzes the effect of ODA on green economic growth in these nations during the specified timeframe. Data was collected from relevant organizations to construct a panel dataset. Subsequently, Pooled OLS, FEM (Fixed Effects Model), and REM (Random Effects Model) were employed and compared to identify the most suitable model for examining the impact of ODA on the green economy. The results indicate that ODA predominantly exerts a positive influence on the green economy in these countries. However, certain variables exhibit negative impacts, such as energy-related ODA increasing CO_2 emissions and ODA in transportation and communication hindering the adoption of renewable energy. Based on the research findings, the author will propose recommendations for the effective utilization of ODA to promote green economic growth in the ASEAN 5 countries.

Keywords: green economy, ODA, ASEAN 5.

1. Introduction

The environment addresses several issues, including climate change and the habitat loss for millions of species. These challenges jeopardize both environmental integrity and social-

Contact Le Quang Minh: lqminh@vnu.edu.vn

economic stability. In these conditions, establishing a green economy - a sustainable economy characterized by limited resource use and greenhouse gas emissions - emerges as an unequivocal objective. Utilizing Official Development Assistance (ODA) is one of the most efficacious methods to attain this objective. ODA may assist the ASEAN 5 nations in advancing green economic growth by enabling and funding initiatives that substantially affect the environment and society. ODA can be utilized to invest in renewable energy and energy efficiency initiatives, public transportation infrastructure, waste and wastewater management, as well as green education and employment programs. These investments mitigate the environmental effect of business and production operations while enhancing access to and use of sustainable energy sources, decreasing greenhouse gas emissions, generating new employment possibilities, and fostering economic growth. Investing in Official Development Assistance capital projects that promote ecosystems and environmental restoration may enhance natural infrastructure and mitigate the effects of climate change on communities. Research and development initiatives in green technology may leverage ODA money to stimulate innovation and creativity in the economy. This not only generates new employment possibilities but also encourages sustainable development and economic growth rooted in knowledge and technology. Consequently, investigating the influence of ODA capital on the green economy in the ASEAN 5 nations is both a pertinent subject and an immediate necessity. Investigating this subject not only provides critical information for nations and international entities to formulate policy decisions, but also aids in the creation of effective strategies and programs to advance green and sustainable economic growth. Presently, there exists a limited amount of research that thoroughly examines the influence of ODA capital on the green economy, particularly concerning the ASEAN 5 nations. Consequently, researching the precise effect aspects of this capital movement would aid the ASEAN 5 nations in devising strategies and

policies to advance their green economy, despite local and international variations. By researching and using methodologies and experiences from ODA-funded initiatives, the ASEAN 5 nations will be able to exchange knowledge, therefore fostering a worldwide green economic community and strengthening international collaboration to address global environmental challenges.

2. Literature review

Prior research has yielded extensive insights into the influence of ODA on the green economy within the ASEAN 5 nations. Much research has examined the diverse elements contributing to environmental deterioration (Rafindadi & Ozturk, 2016; Younis et al., 2021). Furthermore, a lot of research has examined the correlation between foreign aid and environmental quality (Yousaf et al., 2016; Sharma et al., 2019). Numerous studies have investigated the influence of Official Development Assistance (ODA) on green economic sectors, including renewable energy development and ecological sustainability by Wang et al. (2021), ecological footprint by Villanthenkodath et al. (2023), carbon dioxide emissions by Wang et al. (2022), and environmental pressures by Wang et al. (2023). The research has shown consistent findings about the influence of Official growth Assistance (ODA) on green economic growth in the ASEAN 5 nations. Official Development Assistance (ODA) has been instrumental in supplying essential resources to facilitate the shift to renewable energy sources, enhance environmental resource management, and construct green infrastructure. However, Wang et al. (2023) assert that direct aid will exacerbate environmental stress in recipient nations. Indeed, the growth of construction zones may result in environmental transfer pressures and unsustainability. We must formulate aid strategies that equilibrate human development with environmental sustainability. Assistance aims to support Sub-Saharan Africa nations in overcoming poverty; yet, evidence indicates that such aid actually

exacerbates environmental strain in recipient countries. Research conducted by Villanthenkodath et al. (2023) indicates that only merely including renewable energy sources into the main energy mix, supplemented by foreign energy assistance and overall aid flows, would not mitigate the expanding ecological footprint. The research indicates that the positive impacts of foreign energy assistance, overall aid, and foreign direct investment on environmental quality have intensified in recent years. By diminishing their ecological impact, BRICS nations can optimize financial assistance from other countries and international organizations. Wang et al. (2022) employed a threshold model to investigate the non-linear correlation between Official Development Assistance (ODA) and CO2 emissions, utilizing urbanization as the threshold variable. The study revealed that the impact of ODA on elevating CO2 emissions surpasses the efficacy of CO2 mitigation, neutralization, and reduction, which remains inadequate. However, Mahalik et al. (2021) identified a broadly positive effect of overall foreign aid on environmental quality in India. Considering the capacity of overall foreign assistance to sustain environmental quality, it is clear that a more efficient allocation of this aid should prioritize investments in cost-effective clean energy initiatives to mitigate CO2 emissions and avert the repercussions of climate change. Nonetheless, research indicates that the execution of Official Development Assistance (ODA) in green economic growth within the ASEAN 5 nations continues to face specific problems. The constraints encompass the absence of standardization in quantifying the green economy, obstacles in the administration and optimal utilization of ODA money, and reliance on ODA funding from industrialized nations. This presents a significant problem in guaranteeing sustainability and autonomy in green economic growth. Notwithstanding extensive research, the influence of ODA funds on the green economy in the ASEAN 5 nations remains predominantly constrained and under-examined. Comprehensive study is necessary to clarify the effect processes and factors of

ODA capital utilization in fostering green economic growth. There is a necessity for ongoing study about the elements influencing ODA capital in the green economy, encompassing economic, social, and environmental aspects. This study should investigate the strategies and implementation methods to optimize the utilization of ODA in fostering green economic growth in the ASEAN 5 nations. The ASEAN 5 nations ought to persist in and advance their research on the effects of ODA on the green economy. This research will lead to policies and initiatives necessary to promote successful green economic growth while encouraging consensus and collaboration across nations in order to attain sustainable development and environmental protection objectives.

3. Material and methods

3.1. Data collection method

We provide models for estimating the impact of ODA on the green economy in ASEAN 5, each with four dependent and three explanatory variables. The dependent variables CO2 emission, Renewable Energy (RE), and Level of urbanization (UR) were extracted from World Bank Open Data. The remaining dependent variable is Human development index (HDI) data obtained from the United Nations Development Program (UNDP). The explanatory variables, ODA110, ODA230, and ODA215, were obtained from OECD data.

Table 11: Description of variables in the model

Variable		Symbol	Unit	Source
Explanatory variables	Educational aid	ODA110	million USD	OECD
	Transportation and communications aid	ODA215	million USD	OECD
	Energy aid	ODA230	million USD	OECD
Dependent variable	CO2 emissions	CO2	$MtCO_2e$	The World Bank
	Renewable energy	RE	%	The World Bank
	Human development index according to sustainable development goals	HDI	Point	UNDP
	Level of urbanization	UR	%	The World Bank

The impact of ODA capital on the green economy in ASEAN 5 countries between 2005 and 2020 is analyzed using a panel data regression model in the study. Data was gathered from panel data of related organizations. Then, the aggregated OLS, FEM, and REM models were compared and regressed to determine the most appropriate model for testing the impact of ODA on the green economy. The results are derived from experimental testing conducted with Eviews 12 software. The research model that follows is suggested on this basis:

(1) $ln\ (CO2it) = \beta 1 + \beta 2\ (ODA215it) + \beta 3\ l(ODA230it) + \beta 4\ ln(ODA110it) + \beta 5t + \varepsilon it$

(2) $ln\ (HDIit) = \beta 1 + \beta 2\ (ODA215it) + \beta 3\ ln\ (ODA230it) + \beta 4\ l(ODA110it) + \beta 5t + \varepsilon it$

(3) $ln\ (REit) = \beta 1 + \beta 2\ (ODA215it) + \beta 3\ l(ODA230it) + \beta 4\ ln\ ODA110it) + \beta 5t + \varepsilon it$

(4) $ln\ (URit) = \beta 1 + \beta 2\ (ODA215it) + \beta 3\ l(ODA230it) + \beta 4\ ln(ODA110it) + \beta 5t + \varepsilon it$

3.2 Data processing methods

In empirical research, the impact of ODA on the green economy in ASEAN 5 countries must be tested for stationarity and co-integration. Three stages are implemented to evaluate the influence of these two variables:

Step 1: Test the suitability of variables: multi-collinearity test, cross-dependence test and stationarity test.

Step 2: Estimate the impact of ODA on the green economy through testing appropriate panel data regression models Pooled OLS, FEM, REM.

Step 3: Conduct defect testing of the model and fix those defects.

3.3 Research hypothesis

In recent years, the issue of the impact of ODA capital on the environment and sustainable

development has attracted considerable attention from the international community. There have been a number of studies on the impact of ODA on some aspects of the green economy. As a result, the team developed a research hypothesis based on the literature review and previous research article findings.

H1: ODA Transportation and communication has a negative impact on CO2 emissions.

H2: ODA Energy has a negative impact on CO2 emissions

H3: ODA Education has a negative impact on CO2 emissions

H4: ODA Transportation and communication has a positive impact on renewable energy

H5: ODA Energy has a positive impact on renewable energy

H6: ODA Education has a positive impact on renewable energy

H7: ODA in transportation and communication has a positive impact on HDI

H8: ODA Energy has a positive impact on HDI

H9: ODA Education has a positive impact on HDI

H10: ODA Transportation and communication has a positive impact on the level of urbanization (UR)

H11: ODA Energy has a negative impact on the level of urbanization (UR)

H12: ODA Education has a negative impact on the level of urbanization (UR)

4. Results and Discussion

4.1. Descriptive Statistics

Table 12: Descriptive statistics of variables

Variable	CO2	RE	HDI	UR	ODA110	ODA230	ODA215
Obs	80	80	80	80	80	80	80
Mean	242,34	24,4525	0,716	49,4703	106,384	125,582	414,6495
Std.Dev	132,0179	12,231	0,0497	13,5314	94,4309	245,207	563,922
Min	69,306	2	0,634	27,281	14,47	0,07	0,27
Max	605,291	44,3	0,805	77,16	486,28	1435,23	2542,73

4.2. Test of statistical significance

- Correlation coefficient matrix

Table 13: Correlation coefficient matrix for MH1

MH1	LCO2	LRE	LHDI	LUR	LODA110	LODA230	LODA215
LCO2	1,0000						
LRE		1,0000					
LHDI			1,0000				
LUR				1,0000			
LODA110	0.1713	0.3517	-0.0608	-0.6959	1,0000		
LODA230	0.1728	0.2516	0.0245	-0.5945	0.7091	1,0000	
LODA215	-0,1093	0.1334	0.0933	-0.4125	0.6057	0.6084	1,0000

Through the results of the correlation coefficient matrix of the variables, there is no case of correlation coefficient greater than 0.8 between pairs of variables. Therefore, the possibility of multicollinearity in the model is low.

- The Variance Inflation Factor method

Table 14: Results of the Variance Inflation Factor method

Variable	VIF	1/VIF
ODA230	2,24	0,770032
ODA110	2,23	0,831884
ODA215	1,76	0,89837
Average value of VIF	2,07	

The VIF results in Table 14 are all less than 10, which suggests that the research model in question does not exhibit a multicollinearity phenomenon, as per Gujarati (2004).

- Test the stationarity of the time series

Before testing stationarity, the study will use the CSD test to test the cross-sectional dependence of the variables:

Testing cross-sectional dependence of variables

	LCO2	**LRE**	**LHDI**	**LUR**	ODA110	ODA215	ODA230
Breusch-Pagan LM	134,228***	67,344**	146,991***	141,846***	105,93***	7,606	9,542

*** p < 0,01, ** p < 0,05, * p < 0,1

The cross-dependence test indicates that the variables LCO2, LHDI, LRE, LUR, and LODA110 exhibit cross-dependence, while LODA215 and LODA230 do not. The research team will employ Pesaran's (2006) CIPS test for cross-dependent variables and Levin-Lin-Chu's LLC test (2002) for the remaining variables to evaluate the stationarity of the time series of the dependent and independent variables.

Table 16: Stationarity test for time series

Variance	CIPS		Conclusion
LCO2	-2,802*		I(0)
LHDI	-2,596**		I(0)
LRE	-3,176*		I(0)
LUR	-2,97567*		I(0)
LODA110	-2,57**		I(0)
LODA230	-4,452		I(0)
LODA215	-3,953		I(0)
	10%	5%	1%
Critical values	-2,76	-2,92	-3,21
	-2,22	-2,37	-2,66

The results of the stationarity test indicate that the data series incorporated into the model are stationary. Consequently, the long-term impact of ODA on the green economy can be assessed by employing panel data regression estimation results.

4.3. Regression analysis and associated tests

4.3.1. Result of estimating the impact of ODA on the green economy in ASEAN 5 countries.

The regression model includes 3 components: independent variable, dependent variable, and random error. The research team used the LM test and the Hausman test. To choose between the pooled OLS model (POLS) and the random effects model (REM), the research team estimated

the REM and then used the LM Test to check whether εi fluctuated or not. After running the model and considering the impact of ODA on the variables CO2, RE, HDI, and UR, it showed that p < 0.01, so the REM model is more suitable.

Table 17: Estimated impact of ODA on the green economy

Variances		MH1	MH2	MH3	MH4
cons		4,332677 ***	0,121789 ***	- 0,357602 ***	4,584909 ***
		(0,101481)	(0,104948)	(0,007106)	(0,02437)
LODA110		0,183174 ***	0,202652 **	-0,013975 ***	-0,176628 **
		(0,026056)	(0,026946)	(0,00182)	(0,006257)
LODA230		0,055902 ***	0,012515 ***	0,00375 ***	-0,021753 ***
		(0,008915)	(0,00922)	(0,000624)	(0,002141)
LODA215		-0,084589 ***	-0,22268 ***	0,003427 ***	0,006292 ***
		(0,007002)	(0,007241)	(0,000490)	(0,002141)
N Observation		79	79	79	79
N Groups		5	5	5	5
Probability					
RE vs FE		0,0000	0,0000	0,0000	0,0000
RE (FE) vs POLS		0,0000	0,0000	0,0000	0,0000
Heteroskedasticity (White Test)		0,0009	0,0000	0,0119	0,0195
Autocorrelation (Durbin - Watson Test)		0,012	0,0000	0,0000	0,0000
Multicollinearity (Variance Inflation Factor - VIF)	LODA110	2,205	2,2049	2,2049	2,20485
	LODA215	1,748	1,7483	1,7483	1,748312
	LODA230	2,218	2,2183	2,2183	2,218257

*p<0,1, **p<0,05, ***p<0,01

The White test results show that the p value is less than 1%, meaning all 4 regression models have heteroskedasticity. After the Wooldridge test, the p-value is less than 1%, and the regression models have first-order autocorrelation. The conclusion is that the model does not suffer from multicollinearity, with all VIF values being less than 10.

The model's defect tests reveal that all four models exhibit heteroskedasticity and autocorrelation in their errors. The author fixed it by using White's test to recalculate the standard

error for the regression model.

Table 18: Estimated impact of ODA on the green economy after overcoming defects

Variances	MH1	MH2	MH3	MH4
cons	4,332677 ***	0,121789 ***	- 0,357602 ***	4,584909 ***
	(0,359884)	(0,363845)	(0,046961)	(0,154303)
LODA110	0,183174 **	0,202652 **	-0,013975 **	-0,176628 ***
	(0,089973)	(0,079547)	(0,011284)	(0,039382)
LODA230	0,055902 **	0,012515 *	0,00375 **	-0,021753 ***
	(0,039461)	(0,026008)	(0,003930)	(0,012045)
LODA215	-0,084589 ***	-0,22268 **	0,003427 **	0,006292 *
	(0,024708)	(0,022488)	(0,003411)	(0,010666)
N Observation	79	79	79	79
N Groups	5	5	5	5

*p<0,1, **p<0,05, ***p<0,01

4.3.2. Assessing the impact of ODA on the green economy in ASEAN 5 countries

Most of the regression models run showed that the random effects model was appropriate. We have also tested these models for defects, ensuring their reliability. The results demonstrate that ODA aid in transportation and communication significantly reduces CO2 emissions, with the estimated coefficient displaying a negative sign and a p-value of less than 0.01, indicating statistical significance at the 5% level (table 18). Therefore, we accept hypothesis H1, which indicates that an increase in ODA for transportation leads to a decrease in CO2 emissions. The reason may be that ODA helps improve transportation infrastructure such as roads, railways, airports, and seaports, thereby reducing traffic congestion, shortening travel time, saving fuel, and reducing CO2 emissions. In addition, studies such as Slobodan Mitric (2013) have shown that ODA also improves the public transport system and encourages the use of public transport such as buses and subways, contributing to deflation CO2 emissions.

ODA in transportation has a significant effect on renewable energy. ODA aid in

transportation and communications also has a positive impact on renewable energy, with an estimated coefficient that is both positive and statistically significant at the 5% level (p-value less than 0.01). Therefore, hypothesis H4 is accepted. However, this impact does not completely differentiate between fossil and renewable energy, suggesting that the transition to renewable energy is still slow in middle-income ASEAN countries. According to Wang & colleagues (2021), technological progress and changes in social structure can cause ODA capital to become a hindering factor for renewable energy development at a certain stage.

The study examines the influence of ODA on transportation on the Human Development Index (HDI). The study also shows that ODA aid in transportation and communication has a positive impact on the human development index (HDI), with the estimated coefficient having a positive sign and p-value <0, 01 (at 5%). Therefore, hypothesis H7 is accepted. Improvements in transportation infrastructure have helped people easily access health services, education, and employment, especially in rural areas, contributing to improving life expectancy and community health. Ahmed et al. (2020) and Khai et al. (2023) also point out that the development of transportation and communication networks helps better connect regions, supporting economic and social development. At the same time, according to the results, the estimated coefficient for transportation and communication ODA with the level of urbanization also has a positive sign and is statistically significant at the 5% level (p-value < 0.01), so hypothesis H10 can be accepted. The rationale for this outcome is that the influx of ODA capital into transportation and communication sectors facilitates travel, enhances trade, attracts investment, and generates numerous employment possibilities, so fostering economic development. The establishment of road networks is a crucial determinant of urban growth (Li et al., 2019). As the economy advances, residents from rural areas increasingly relocate to urban centers in search of educational and employment prospects,

improving their quality of life and facilitating substantial urbanization.

The study focuses on the influence of Official Development Assistance (ODA) in the energy sector on CO2 emissions and renewable energy. ODA in the energy sector has a positive impact on CO2 emissions with an estimated coefficient of positive sign and statistical significance at the 5% level (p-value < 0.01), rejecting hypothesis H2. This shows that as ODA flows for energy increase, CO2 emissions also increase, largely because energy projects still rely on fossil energy. This has been proven in studies such as those by Dennis Tirpak and Helen Adams, which show that the use of energy ODA capital is still not 100% positive and has made little significant contribution to sustainable development.

However, energy ODA also has beneficial impact on renewable energy, with a positive and statistically significant estimated coefficient that accepts hypothesis H5. This suggests that while ODA may lead to an increase in CO2 emissions, it also contributes to the development of renewable energy sources like wind and solar power, thereby assisting countries in reducing their reliance on coal and other fossil fuels. Alfonso Carfora and colleagues (2021) argue that international aid, especially ODA, is a useful financial tool to promote green energy in developing countries. However, Qiang Wang et al. (2021) commented that at a certain stage of technological progress and social structural changes development, ODA capital will hinder development of renewable energy. Therefore, in order to achieve more efficient utilization of ODA capital to promote renewable energy, factors of technological progress and social structural changes need to be considered more closely. Meanwhile, the coefficient estimate for ODA flowing into urbanization has a negative sign and is statistically significant at the 5% level with $p < 0.01$, thus accepting hypothesis H11. When energy ODA flows into projects such as rural electrification, clean water, and improving transportation systems, it can help create local jobs and improve quality

of life.

We are examining how educational ODA affects CO2 emissions and renewable energy. ODA in the education sector has an impact on increasing CO2 emissions, rejecting hypothesis H3, with a positive estimated coefficient and p-value < 0.01. This may be due to the construction of educational infrastructure and energy use in teaching and learning, causing CO2 emissions to increase. However, educational ODA has a positive impact on renewable energy, supporting hypothesis H6. This shows that education helps raise awareness of the benefits of renewable energy and supports research into green technologies. Education through ODA also contributes to the reduction of urbanization, supporting hypothesis H12. This shows that ODA aid in the field of education helps improve the level of education and skills for people in rural areas, thereby creating better employment opportunities and helping to increase income. Therefore, rural people are better educated and do not need to migrate to the city to find job opportunities.

The impact of ODA on the human development index (HDI) is a topic of discussion. The study shows that the HDI index has a negative impact on ODA capital flows with a negative beta coefficient and p-value <0.01, rejecting hypothesis H7, H8, and H9. This is similar to studies by Gabriel Staicu & Razvan Barbulescu (2016) and McGillivray & Noorbakhsh (2004), which show that international aid has a negative or insignificant impact on the HDI index in some regions, although in Southeast Asia, Lin et al. (2008) has shown a positive association between ODA and HDI. Owing to differences in each country's internal development, the flow of ODA capital into that country can have a negative or positive impact on the HDI index.

5. Recommendations

5.1. Strategic allocation of ODA resources towards education to foster sustainable economic

development.

Vietnam needs to invest in education in rural and remote areas by building schools using renewable energy and energy-saving designs. This not only narrows the gap in education levels, creates high-quality human resources, and cuts migration to big cities, but also reduces pressure on urban infrastructure and promotes sustainable development in rural areas. village.

Thailand and Malaysia are under pressure to reduce carbon emissions and transition~~ing~~ to renewable energy. They should use ODA capital to build smart and sustainable schools in big cities and industrial zones. Simultaneously, it is essential to incorporate educational programs focused on renewable energy and environmental mitigation to decrease carbon emissions and improve competitiveness. This alleviates the strain on urban environments and enhances educational quality.

The Philippines and Indonesia, with their rapid urbanization and pollution problems, need to invest in green schools in large cities and industrial areas. Using ODA capital to build environmentally friendly educational infrastructure and strengthen environmental protection education programs will help improve learning conditions, raise awareness about pollution, and protect ~~health.~~ community health. These investments will help reduce dependence on fossil energy and promote sustainable development.

5.2. Strategic allocation of ODA resources towards the energy sector to facilitate the transition to a green economy.

In ASEAN countries, the effective use of ODA capital in energy can promote green economic growth. In Indonesia, ODA should focus on solar and wind power projects in rural areas and small islands, along with modern power transmission systems. Malaysia needs to invest in renewable energy technology in industrial areas and major cities, as well as cooperate

internationally on technological innovation. The Philippines, a country with one of the highest pollution levels in the region, should use ODA to develop solar and wind power in highly polluted areas to reduce CO2 emissions. Thailand must construct solar and wind power projects in industrial and urban areas, coupled with power transmission systems, to guarantee the efficient distribution of renewable energy. Vietnam should focus on renewable energy in rural and remote areas to improve the economy and people's living conditions and reduce its dependence on fossil energy. Effective use of ODA capital in energy is a way to promote green and sustainable economic growth in countries in the ASEAN-5 region. This requires close cooperation between countries, international organizations, and private individuals to ensure effective and sustainable investment and implementation of renewable energy projects.

5.3. Strategic allocation of ODA resources towards transportation and communication infrastructure to foster sustainable economic development.

Investment in transport and communication infrastructure using ODA capital is key to promoting green economic growth in ASEAN 5 countries. Malaysia should improve transport infrastructure in major cities and industrial parks to reduce congestion, save fuel, and create favorable conditions for investment. Indonesia needs to develop public transportation and telecommunications systems to reduce congestion and save energy. To improve air quality in polluted areas, Thailand and the Philippines must improve public transportation and use renewable energy. Vietnam should focus on upgrading mobility systems in rural and mountainous areas to reduce congestion and CO2 emissions and improve information connectivity. These innovations not only support the use of renewable energy but also contribute to sustainable development and improved quality of life, in line with the ASEAN 5 common goal of minimizing negative impacts

on the environment.

6. Conclusion

Research results show that ODA capital has a positive impact on green economic development in ASEAN 5 countries through promoting research and development of renewable energy, prioritizing the use of clean energy, and promoting environmentally friendly public transportation. However, this capital source also contributes to negative outcomes, including unresolved high CO2 emissions, heightened urbanization, and constraints on human development, health, longevity, and education.

This research paper focuses on sectors such as transportation, energy, and education and is based on factors such as CO2 emissions, renewable energy, the human development index (HDI), and urban chemistry. However, further research is necessary to fully understand the extent of ODA's impact on the green economy, particularly in the context of sustainable development based on human factors.

Effectively utilizing ODA capital for sustainable development is still a long-term challenge for ASEAN 5 countries. Factors such as limited technology and human resources, as well as the gradual transition from fossil fuels to green energy, are contributing to this challenge. It necessitates a shift in awareness about green lifestyles and efforts from all levels of government to ensure sustainable development in the future.

References:

Lin, T., Zhuang, J., Yarcia, D., & Lin, F. (2008). Income inequality in the People's Republic of China and its decomposition: 1990–2004. *Asian Development Review, 25*(01n02), 119-136.

Mahalik, M. K., Villanthenkodath, M. A., Mallick, H., & Gupta, M. (2021). Assessing the effectiveness of total foreign aid and foreign energy aid inflows on environmental quality in India. *Energy policy, 149*, 112015.

McGillivray, M., & Noorbakhsh, F. (2004). Composite indices of human well-being. *Research Paper, 63*.

OECD. ODA by sector,. Retrieved from https://www.oecd.org/en/data/indicators/oda-by-sector.html

Rafindadi, A. A., & Ozturk, I. (2015). Natural gas consumption and economic growth nexus: Is the 10th Malaysian plan attainable within the limits of its resource? *Renewable and Sustainable Energy Reviews, 49*, 1221-1232.

Staicu, G., & Barbulescu, R. (2017). A study of the relationship between foreign aid and human development in Africa. *International development, 135*, 135-152.

The World Bank. CO2 emissions (kt) - Indonesia, Thailand, Viet Nam, Philippines, Malaysia. Retrieved from https://data.worldbank.org/indicator/EN.ATM.CO2E.KT?end=2020&locations=ID-TH-VN-PH-MY&start=2012

UNDP. Human Development Data. Retrieved from https://hdr.undp.org/data-center

Villanthenkodath, M. A., Ansari, M. A., Mahalik, M. K., & Lean, H. H. (2023). External finance for climate change mitigation: Assessing the impact of energy aid and total aid inflows on the ecological footprint. *Journal of Climate Finance, 5*, 100028.

Wang, Q., Guo, J., & Dong, Z. (2021). The positive impact of official development assistance (ODA) on renewable energy development: evidence from 34 Sub-Saharan Africa Countries. *Sustainable Production and Consumption, 28*, 532-542.

Wang, Q., Guo, J., & Li, R. (2022). Official development assistance and carbon emissions of recipient countries: a dynamic panel threshold analysis for low-and lower-middle-income countries. *Sustainable Production and Consumption, 29*, 158-170.

THE IMPACT OF TRADE PROTECTIONIST MEASURES ON VIETNAM'S AGRICULTURAL EXPORTS

Vu Thanh Huong, Hoang Thi Nguyet Ha, Nguyen Thai Khanh An, Luong Thi Hong Duyen, Dao Nguyen Phuong, Nguyen Thu Ha

Vietnam National University – University of Economics and Business, Vietnam

Abstract:

In recent years, global economic, political, and social fluctuations such as the COVID-19 pandemic, the Russia-Ukraine conflict, the US-China trade war, and changes in national trade policies have led to an increase in protectionist trends. This paper aims to evaluate the impact of trade protectionist measures on Vietnam's exports of agricultural products to 20 major trading partner countries using the gravity model for a dataset collected from 2005 to 2022. The research findings indicate that factors like GDP of trading partners and the presence of FTAs have a positive impact, non-tariff barriers such as Sanitary and Phytosanitary measures (SPSs) and Technical Barriers to Trade (TBTs) have shown to negatively affect Vietnam's agricultural exports. Interestingly, tariffs, contrary to expectations, have a positive correlation with exports and especially SPS, QR measures have no impact on Vietnam's agricultural exports. Based on the above research findings, the study proposes that Vietnam needs to focus on improving business competitiveness and expanding markets. This requires close coordination between the government and businesses, along with the application of modern technologies.

Keyword: Trade Protectionist Measures, Exports, Agriculture, Vietnam

Contact Vu Thanh Huong: huongvt@vnu.edu.vn; Hoang Thi Nguyet Ha: hoangthinguyetha2223@gmail.com; Nguyen Thai Khanh An: akhnh60@gmail.com; Luong Thi Hong Duyen: luongthihongduyen1203@gmail.com; Dao Nguyen Phuong: phuongnoo2k3@gmail.com; Nguyen Thu Ha: phamnguyenthuha1@gmail.com

1 Introduction

Vietnam has many favorable conditions for agricultural development and production. Despite the negative impacts of Covid-19 pandemic, Vietnam’s GDP growth rate for 2020 still reached 2.91%, placing Vietnam among the highest in the world (Nguyễn Thị Hương, 2020). According to the Ministry of Industry and Trade (2020), Vietnam's export volume of agricultural and aquatic products decreased by 2.5% in 2020. However, the agricultural export value still reached a record level of USD 41.20 billion this year. This is an incredible achievement by Vietnamese farmers and businesses who have strived to seize every opportunity to bring our agricultural products to the world during the extremely challenging circumstances caused by COVID-19 pandemic.

The signing of Free Trade Agreements (FTAs) has provided new opportunities, creating conditions for Vietnam to boost agricultural exports to international markets, especially high-value markets such as the United States, the European Union, Japan and China. As a result, the export value of Vietnam's agricultural products currently ranks second in Southeast Asia and fifteenth in the world (Trần Thị Thu Hiền, 2023)However, recent global economic, political, and social upheavals- such as the COVID-19 pandemic, the Russia-Ukraine conflict, the US-China trade war, territorial disputes in various regions, and changes in national trade policies- have led to a trend of increasing protectionism (Lê Đình Quý, n.d.; Linh Thanh, 2020; Tố Uyên, 2024). Countries are protecting their domestic economies by increasing technical barriers and trade defense measures such as anti-dumping and safeguard measures. Additionally, measures related to green standards and carbon credits to protect domestic production have posed challenges for exporting countries (Vũ Huy Hùng, 2024). For Vietnam, these measures also present significant challenges to its exports.

Based on the role of agricultural exports to Vietnam and the increasing trend of trade protectionism in the international market, analyzing and assessing the impact of trade protection measures on Vietnam's agricultural exports is essential. Therefore, the paper aims to analyze the impact of trade protection measures on Vietnam's agricultural export and propose implications to help Vietnam overcome protectionist barriers and boost its agricultural exports in the global market.

2 Literature review

2.1 Theoretical background on trade protectionist measures

Trade protectionism includes government policies that protect domestic producers from foreign competitors within a specific industry, thereby increasing the price of imported goods while simultaneously reducing the price of domestic products and limiting access to foreign goods by promoting domestic products (Abboushi, 2010). According to Nicolás Albertoni (2024), protectionist trade policy refers to defensive measures implemented by one country that affect market access and commercial interests of other countries. This includes both tariffs and NTMs, which limit market access to foreign commercial interests. Thus, trade protectionism can be understood as a measure to protect domestic goods (excluding services, investment products, and intellectual property products) by imposing restrictions on imports when the influx of such goods increases, posing a threat to the prosperity of domestic products (Le Hoang Quynh, 2020).

Trade protectionism is also defined as measure adopted by countries to encourage domestic production and business activities, stimulate economic growth, and avoid trade deficits in the international market. Following the economic crises and recessions of 1997 and 2008, trade protectionism is experiencing a resurgence and is becoming more pronounced (Fajgelbaum Pablo D et al., 2020). One distinctive aspect of this rising protectionism is that it is occurring against a

backdrop of intense globalization, major trade policy tensions are erupting faster. Economic interdependence in the context of high trade uncertainty is devolving into a spiral of protectionism because many governments simultaneously face pressure to reflate national economies and defend national commercial interests (Albertoni, 2024). It has created challenges for the global trade system and potentially threatened global economic recovery and growth, and could even reverse the process of globalization (Roye B, 2018). Recently, Ziyi Zhang (2024) finds that while trade protection measures may benefit certain countries or industries in the short term, such practices are likely to harm the overall interests of the global economy in the long run, increasing uncertainty and instability within the international community.

The primary benefit of trade protectionism is to protect and enhance the market share of domestic industries while imposing numerous restrictions and risks on foreign businesses accessing the market and growing their sales. Suppose a country is striving to develop strongly in a new industry. In this case, tariffs will shield it from foreign competitors, giving companies in the new industry time to develop their competitive advantages (Amiti et al., 2019)

Additionally, trade protectionism promotes the growth of domestic industries, reduces imports, creates temporary jobs, and increases GDP through domestic production. However, trade protectionism can cause stagnation in technological progress due to lack of competition, raise product prices, and exerts pressure on foreign businesses. Protectionism can also lead to political, cultural, and economic isolation, slow growth, and job losses (Amiti M. et al., 2019; OECD, 1985).

2.2 Literature review on the impact of trade protectionist measures on exports in general

Given the significance of trade protectionist measures in international trade, numerous studies have been conducted to analyze and assess their impact on trade, particularly exports. Many

studies have demonstrated the adverse effects of trade protectionism on export activities. For instance, Olga Solleder (2013) investigated the impact of export tariffs on trade and estimated the trade distortions caused by export tariffs. The results showed that export tariffs contribute significantly to trade reduction, particularly affecting the mining industry. Similarly, the study by Felbermayr, G., & Sandkamp, A. (2020) used Chinese customs data to investigate the trade effects of anti-dumping policies (ADP). Based on an enterprise-level gravity model, ADP tariffs reduce exports, leading firms to withdraw but not affect production prices.

However, alongside the negative aspects, some studies suggest that trade protectionist measures can also have positive impacts on export activities. Chen, Otsuki, and Wilson (2008) asserted that Technical Barriers to Trade (TBTs) influence firms' export decisions. Implementing quality standards and labeling regulations positively affects the average volume of exports and the ability to expand the range of exported products for firms.

Other studies provide a more nuanced view, concluding that protectionist measures can have both positive and negative effects on exports. Ganslandt and Markusen (2001) demonstrated that imposing regulations and technical standards negatively impacts trade through increasing trade costs for exporters. On the other hand, protectionist measures can benefit exporters by ensuring that goods are certified as safe and compatible with domestic products. Similarly, the study by Ghodsi, Gruber, and Stehrer (2016) found that while the number of TBT and SPS measures exceeds the number of quantitative restrictions, the later have a much larger impact on trade. Additionally, the results indicated that non-tariff measures positively affect global imports. The authors explained that an exporting country will increase its exports if it has domestic policies and standards similar to the non-tariff measures implemented by the importing country, while other exporting countries will see a decrease in export volumes. Chen & Bao (2022) indicated that TBTs

can impose both positive and negative impacts on exports. On the one hand, TBTs increase the compliance costs and have the trade-restriction effect. On the other hand, TBTs improve product quality and mitigate uncertainty, which enhances demand and promotes trade.

Numerous studies have demonstrated that the impact of trade protectionist measures varies significantly across different types of goods. These measures tend to have less favorable effects in the agriculture and food sectors than in other industries. Extensive empirical research consistently shows that trade protectionist measures have a more negative impact on agricultural products than on manufactured goods (Hoekman & Nicita, 2011). Wood et al. (2019) focus on the empirical study of international trade among China, South Korea and Japan. They conclude that almost all products exported in a region can benefit from NTMs, specially manufactured industrial goods, whereas, agricultural products suffer from negative influences. Overall, trade barriers for agricultural products are particularly pronounced and significant in developed countries, as indicated by the majority of studies.

2.3 Literature review on the impact of trade protectionist measures on agricultural exports

Many domestic and international studies have employed various research methods and approaches to assess the impact of trade protectionist measures on agricultural exports. Some of these studies have used gravity models to determine the direction and extent of the impact of trade protectionist measures on agricultural exports and imports. Using the gravity model, Ling (2013) and Dong and Zhu (2015) indicated that developed countries tend to use stricter technical measures and higher requirements than developing countries. As a result, agricultural exports from developing to developed countries face numerous difficulties and barriers in market penetration. The research by Antoine Bouët and David Laborde Debucquet (2010) and Olga Solleder (2013)

shows that export tariffs are associated with a significant reduction in trade, particularly in the crop and mining sectors.

Studies in Vietnam have focused on the impact of trade protectionist measures and non-tariff measures (NTMs) on Vietnam's agricultural exports, highlighting both positive and negative effects. Research by Le Hoang Quynh (2020) and Phan The Cong et al. (2023) pointed out that SPSs and TBTs are major factors causing difficulties for Vietnam’s agricultural exports. Importing countries, such as the United States, the EU, Japan, and China have applied stringent standards, causing many products to fail to meet quality and food safety requirements, with coffee and seafood being the most affected. Additionally, the authors demonstrated that protective tariff such as anti-dumping duties, safeguard duties, and countervailing duties increase the cost of goods, placing significant pressure on Vietnamese enterprises to compete with domestic products from importing countries.

However, the research by Nguyen Viet Khoi et al. (2014) also showed that although NTMs such as TBTs and SPSs have put great pressure, in the long term, they would encourage Vietnamese enterprises and farmers to enhance production capabilities, meet international standards, and thus increase the value and reputation of their products in the global market. Research by Nguyen Thi Thu Hien, Vu Thi Thanh Huyen, Phan The Cong, and Pham Minh Dat (2022) demonstrated that if TBTs and SPS smeasures are complied with, they can boost agricultural exports, particularly with products like fruits, coffee and tea when meeting these standards.

In summary, a considerable amount of research has assessed the impact of trade protectionist measures on agricultural exports. In Vietnam, studies have mainly focused on a few key export markets, such as the US, China, the EU, and Japan. Therefore, this paper contributes to

the previous research by taking into consideration more of Vietnam's partner markets and developing a gravity model to assess the impact of trade protectionist measures at various levels on Vietnam's agricultural exports.

3 The current state of trade protectionism in Vietnam’s key agricultural export markets

3.1 Tariff

Trade protectionism has risen due to economic nationalism, supply chain disruptions from the COVID-19 pandemic, and growing geopolitical tensions. Countries seek to protect domestic industries, reduce dependency on foreign imports, and secure strategic resources. Additionally, conflicts like the U.S.-China trade war and Ukraine-Russia conflict further encourage protective trade policies. Looking at Vietnam's three major agricultural export markets, - the United States, the European Union, and China — we can observe some of the following.

In recent years, the US has imposed or threatened to impose numerous trade protectionist measures by using tariffs to protect domestic industries from unfair competition from other trading partners, especially China. These measures often include imposing additional tariffs on imported goods from certain countries, particularly those the US deems to have engaged in unfair trade practices or violated international trade rules. According to data provided by the WTO, the US’s average MFN (Most-Favored-Nation) tariff rate on all products remained stable at 3.4% from 2017 to 2018 (Figure 1). The rate was followed by a slight decrease of 0.1% to 3.3% in 2019 and remained at 3.4% from 2020 to 2021. However, a general trend showed that US tariffs from 2017 to 2022 have tended to decrease.

The average MFN tariff rate in 2021 on all products imported into the EU is higher compared to the US (5.1% vs. 3.4%). The EU's average MFN tariff rate remained stable between

5.1% and 5.2% from 2017 to 2022 (Figure 1). China's average MFN tariff rate has fluctuated significantly. During 2017-2018, the MFN tariff rate was 9.8%, twice as high as the EU and three times higher than the US. However, by 2019, China began reducing its average tariff rate on imports from most of its trading partners. Specifically, the MFN tariff rate decreased to 7.6% in 2019 and remained at 7.5% from 2020 to 2022. This move by China, amid the escalating trade war with the US, is part of its long-standing goal to boost imports.

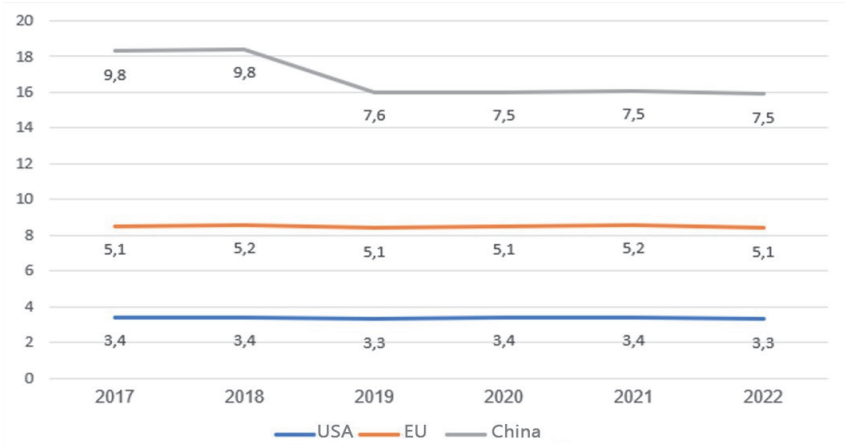


Figure 1. MFN Tariff Rates Applied by the US, EU, and China
Source: WTO, 2023

3.2 Non-tariff measures

As of December 31, 2023, the US has implemented 2,043 TBT (Technical Barriers to Trade) measures (Table 1). The corresponding number of SPS (Sanitary and Phytosanitary) measures is 3,315. The US has also applied many ADP (Anti- Dumping) measures, totaling 505. The US has a high number of SSG (Special Safeguard) measures, totaling 496. However, the US uses QR (Quantitative Restrictions), TRQ (Tariff Rate Quotas), and XS (Export Subsidies) measures less frequently.

Table 1. Number of Non-Tariff Measures Used by the US as of December 31, 2023

SPS	TBT	ADP	CV	SG	SSG	QR	TRQ	XS
3315	2043	505	179	3	496	59	52	13

Source: WTO, 2024

In the US market, imported agricultural products must comply with a range of strict legal regulations, including the Plant Protection Act (PPA), the Food Safety Modernization Act (FSMA), and the Food Quality Protection Act (FQPA), among other regulations. Federal agencies such as the Food and Drug Administration (FDA), the Environmental Protection Agency (EPA), the Food Safety and Inspection Service (FSIS), and the Animal and Plant Health Inspection Service (APHIS) of the Department of Agriculture (USDA) are responsible for enforcing these regulations, along with state agencies.

As of December 31, 2023, China has implemented 1,384 SPS and 1,652 TBT measures. Another frequently used NTMs in China is ADP, which has 123 measures. China has used CV (Countervailing Duties), SG (Safeguards), SSG, and TRQ less frequently or not at all (Table 2).

Table 2. Number of Non-Tariff Measures Used by China as of December 31, 2023

SPS	TBT	ADP	CV	SG	QR	TRQ
1384	1652	123	11	1	42	10

Source: WTO, 2024

China applies technical standards and conformity assessment procedures regulated by various laws and regulations, including the Standardization Law, the Agricultural Product Quality and Safety Law, the Product Quality Law, and the Consumer Rights Protection Law. China also requires all imported products to have Chinese labels that indicate the type of food, brand, production address, country of origin, ingredients, production date, and expiration date. Recently, China has tightened the enforcement of regulations for imported agricultural and aquatic products, including designating specific import ports and strictly implementing quality management and traceability measures.

As of December 31, 2023, Japan has applied 956 SPS and 960 TBT measures. Another frequently used NTM in Japan is SSG, with 173 measures. Less commonly used measures include ADP, QR, and TRQ (Table 3).

Table 3. Number of Non-Tariff Measures Used by Japan as of December 31, 2023

SPS	TBT	ADP	SSG	QR	TRQ
956	960	9	173	85	18

Source: WTO, 2024

Agricultural products imported into Japan must comply with various food safety and phytosanitary standards. Before clearance, they must undergo a thorough inspection by the relevant authorities. Additionally, agricultural production must adhere to Japan's strict agricultural standards and imported products must comply with the Food Sanitation Law, Japan's Agricultural Standards Law, and the Measurement Law. Furthermore, phytosanitary regulations for imported agricultural products must adhere to regulations enforced by the Plant Protection Division of the Ministry of Agriculture, Forestry, and Fisheries. The use of pesticides in agriculture and the storage of agricultural products must be carefully and safely managed. Any violations of quality regulations will result in the destruction or return of the goods. Japanese customs is committed to enhancing cargo inspections, which may lead to unwanted risks and costs for exporting businesses.

4 Methodology and data

4.1 Methodology

The Gravity Model is an economic model used to analyze and predict international trade flows between countries. It is based on Newton's Law of Universal Gravitation, which states that the gravitational force between two objects is proportional to the product of their masses and inversely proportional to the square of the distance between them.

Tinbergen (1962) was the first economist to apply the Gravity Model to analyze factors affecting international trade flows. Tinbergen's study concluded that exports were positively influenced by the income of the countries involved and negatively affected by the distance between them. However, it was noted that this model lacked a theoretical foundation and failed to consider

the impact of multilateral trade barriers. Consequently, many variants of the traditional model were developed, incorporating multilateral barriers, and the Gravity Model became widely used in empirical research to quantify the trade effects of economic linkages.

Based on this foundation, the paper used the gravity model to assess the impact of trade protectionist measures on Vietnam's agricultural exports. The model used in this paper includes the usual variables found in gravity models, along with additional dummy variables that affect Vietnam's agricultural exports as follows:

$$LnExport_{ijt} = \beta 0 + \beta 1 LnGDP_{jt} + \beta 2 LnDIS_{ij} + \beta 3 LnREER_{ijt} + \beta 4 FTAs_{ijt} + \beta 5 Tariff_{jt} + \beta 6 SPS_{sjt} + \beta 7 TBT_{sjt} + \beta 8 ADP_{sjt} + \beta 9 QR_{sjt} + \beta 10 XS_{sjt} + \varepsilon_{ijt}$$

Where:

Ln: Natural logarithm, i: Việt Nam, j: Partner country

Export$_{ijt}$: Value of agricultural exports from country i to the importing country j in year t

GDP$_{jt}$: Gross Domestic Product of country j in year t

DIS$_{ij}$: Distance between country i and country j

REER$_{ijt}$: Real Effective Exchange Rate between country i and country j in year t

FTAs$_{ijt}$: Free Trade Agreements between country i and country j (dummy variable, equals 1 if country i and country j are in an FTA in year t; otherwise, equal to 0).

Tariff$_{jt}$: Tariff rate imposed by country j on country i's agricultural exports in year t

SPS$_{sjt}$: The number of Sanitary and Phytosanitary measures imposed by country j on country i's agricultural exports in year t

TBT$_{sjt}$: The number of Technical Barriers to Trade measures imposed by country j on country i's agricultural exports in year t

ADP$_{sjt}$: The number of Anti-Dumping measures imposed by country j on country i's agricultural exports in year t

QR$_{sjt}$: Quantitative Restrictions imposed by country j on country i's agricultural exports in year t

XS$_{sjt}$: Export Subsidies measures imposed by country j on country i's agricultural exports in year t

4.2 Data

Data for Vietnam's agricultural exports to 20 partner countries from 2005 to 2022 were collected from the World Bank. As a result, the dataset comprises a sample size of 360 observations. 20 countries selected to include into the gravity model (Appendix 1) China, the United States, Australia, Egypt, Brunei, Canada, South Africa, Mexico, India, Indonesia, Israel, Switzerland, Japan, New Zealand, Malaysia, the Philippines, Iceland, Russia, South Korea, and Thailand represent major markets for Vietnamese agricultural exports, accounting for approximately 71.54% of Vietnam's total agricultral export value in 2021, with the U.S. having the highest export share (28.69%), followed by China (16.65%). Agricultural products in this paper included products classified from HS1 to HS24 by World Custom Organization.

Data on GDP, population and exchange rates were extracted from the World Bank database. Distance data are sourced from the Geodatos database. Tariffs were sourced from the World Trade Organization (WTO)'s tariffdata database and non-tariff measures were from the I-tip database.

5 Results and Discussion

5.1 Descriptive statistics

Table 4 presents the number of observations, minimum value, maximum value, mean value, and standard deviation. During the period from 2005 to 2022, LnExport, which refers to the export turnover of Vietnam's agricultural products, has an average value of 3.225, with a consistent upward trend over the years. The minimum value was recorded in 2005, with LnExport at 2.015, while the maximum value reached 3.974 in 2022.

Table 4. Descriptive Statistics of the Variables in the Model

Variables	N	Minimum	Maximum	Mean	Std. Deviation
LnExport	360	2.015	3.974	3.226	0.53
LnGDP	360	2.255	10.144	6.450	1.739
LnDIS	360	6.897	9.601	8.507	0.775
LnREER	360	0.365	10.074	7.136	2.425
FTA	360	0	1	0.511	0.501
Tariff	360	1866	2344	2062.619	130.894
SPS	360	0	173	29.750	38.523
TBT	360	0	116	11.450	25.311
ADP	360	0	3	0.250	0.768
QR	360	0	50	15.150	15.894
XS	360	0	31	3.400	7.307
Valid N (listwise)	360				

Source: Results of the Authors' Analysis

5.2 Results

Table 5 presents the results of the regression estimation using the gravity model. The estimation results indicate that most variables have the expected signs. The R-squared coefficient of the model is 0.633, suggesting that the model is useful and explains 63.3% of the variation in Vietnam's agricultural export turnover. GDP, FTA, Tariff and TBTs positvely affect while REER, SPSs, ADP and XS negatively affect the country's agricultural exports. There is not enough statistical evidence to show an impact of SPSs and QR on Vietnam's exports.

Table 5. The impact of trade protectionist measures on Vietnam's agricultural exports

Variables	LnExport
LnGDP	0.100**
	(0.000)
LnDIS	0.099**
	(0.005)
LnREER	-0.036***
	(0.000)
FTA	0.233*
	(0.000)
Tariff	0.003***
	(0.000)
SPS	-1.919E-5***
	(0.969)
TBT	0.003***
	(0.013)

ADP	-0,120**
	(0.000)
QR	-0.002***
	(0.240)
XS	-0.011***
	(0.000)
Constant	-4.749
Observations	360
R-Squared	0.633

Note: Standard errors in parentheses
*** p<0.01, **p<0.05, *p<0.1

Source: Results of the Authors' Analysis

5.3 Discussion

The coefficient for GDPjt in the model is positive, as initially expected. This means that the volume of trade between Vietnam and its partner countries is directly proportional to the size of the importing country's economy. When the market size and purchasing power in importing countries increase, it raises the demand for Vietnam's agricultural exports. The model indicates that when the GDPjt of a partner country increases by 1%, Vietnam's agricultural exports also increase by an average of 0.1%.

The variable DISij represents the trade transaction costs between Vietnam and its partner countries, showing a positive sign, which is contrary to initial expectations. The research group's expectation was that the DISij variable would have a negative sign, indicating that agricultural exports from Vietnam to nearby countries would reduce transportation costs. However, the research model yields a positive result for the DISij variable, meaning that an increase in distance between Vietnam and its trading partners is proportional to the volume of trade. Specifically, when the distance between Vietnam and partner countries increases by 1%, Vietnam's agricultural export turnover increases by an average of 0.099%. This is due to major markets such as the United States, Japan, South Korea, and EU member countries, which play a significant role in increasing the value of Vietnam's agricultural exports, even though these countries are far from Vietnam.

The coefficient for the variable REERijt in the export equation is negative, contrary to initial expectations. This indicates that when the exchange rate increases by 1%, Vietnam's agricultural exports will decrease by 0.036%. This suggests that the value of the Vietnamese dong is higher compared to the average of several foreign currencies, leading to a loss of price competitiveness for Vietnam's agricultural exports and a decline in export turnover. This can be explained by the fact that, despite the decrease in export prices, Vietnamese goods still struggle to compete with rival products. The structure of Vietnam's key export items is quite similar to that of China, and even though the prices of Vietnamese goods may drop due to devaluation, they remain higher than those of Chinese products. Another reason is the rising proportion of input materials in Vietnam's exports, which increases selling prices. Therefore, the negative value of the REERijt variable has a detrimental impact on Vietnam's agricultural exports, making it difficult for Vietnam to compete on price in the international market.

The coefficient for the variable FTAs reflects the level of trade between Vietnam and countries around the world. In the research model, the results yield a positive coefficient that is statistically significant, indicating that when Vietnam and its trading partners share a free trade agreement, the value of Vietnam's agricultural exports increases by an average of 23.3%. This result aligns with the initial expectations of the research team. In international trade, when Vietnam and a partner country have a shared FTA, Vietnamese agricultural products exported to that country benefit from the tariff concessions established in the agreement, thereby helping to reduce export costs and increase the export value of Vietnam's agricultural products.

The coefficient for the variable Tariff is positive and statistically significant, indicating a direct relationship with Vietnam's agricultural exports. Specifically, if tariff measures on agricultural products increase by 1 unit, the export turnover of agricultural products will increase

by an average of 0.3%. This result contradicts concerns that imposing tariffs would restrict Vietnam's agricultural exports. In reality, it has been demonstrated that when Vietnam participates in free trade agreements, the process of tariff reduction begins. For example, when the CPTPP agreement came into effect, Australia committed to eliminating tariffs immediately on most of Vietnam's fruit and vegetable products. The long-term tariff reduction roadmap has provided many advantages and significant benefits for Vietnam's trade activities. Additionally, the restructuring of export products plays an important role in mitigating the negative impacts of tariffs. Vietnam has shifted towards exporting high-value agricultural products that are less sensitive to tariffs, such as fruits, vegetables, and seafood. According to the General Department of Customs, in 2023, Vietnam's exports of fruits and vegetables reached $5.602 billion, an increase of 6.67% compared to 2022. Therefore, while this relationship may seem counterintuitive, it makes sense when considering the above factors, and high tariffs do not always hinder agricultural exports.

Once tariff measures are eliminated, countries will inevitably seek other ways to restrict imported goods from outside their borders. The model results indicate that non-tariff measures have varying impacts. The variables representing the number of non-tariff measures imposed on Vietnam's agricultural exports, such as ADP and XS, show significant negative effects on trade and are statistically significant. This confirms the authors' previous expectations. In practice, since the implementation of ADP and XS measures, the export value of Vietnam to importing markets has increased very slowly, and in some cases, even declined. The estimated effect of the ADP measure (-0.120) is significantly larger than that of XS (-0.011). This implies that if the ADP and XS measures increase by 1 unit, the export turnover of Vietnam's agricultural products will decrease by an average of 12% and 1.1%, respectively. A representative from the Trade Defense Department (Ministry of Industry and Trade) stated that since the first anti-dumping investigation

involving Vietnam in 2002, the United States has regarded Vietnam as a non-market economy. In addition to the United States, the EU also maintains the view of Vietnam as a non-market economy. In 2015, during FTA negotiations, a representative of the European Union delegation noted to the press that signing the agreement did not mean recognizing Vietnam as a market economy. In anti-dumping investigations, being classified as a non-market economy has significant implications for businesses. For example, when calculating dumping margins, the United States uses the value from a third country considered to be a market economy to assess the production costs of Vietnamese companies instead of using the data provided by these companies. This results in inflated dumping margins that do not accurately reflect the production realities of Vietnamese enterprises (WTO Center, 2023b).

Based on the analysis results, while ADP and XS have negative impacts on Vietnam's agricultural exports, the coefficient for TBT shows a positive difference, indicating a beneficial effect. Specifically, if the TBT measure increases by 1 unit, Vietnam's export turnover will increase by an average of 0.3%. TBT measures contribute to enhancing the safety of Vietnamese agricultural products, thereby increasing consumer confidence in these items and boosting demand and exports of Vietnamese agricultural products to partner countries. The heightened focus on product quality and encouragement of innovation within enterprises aligns with Vietnam's current development strategy, especially in the context of the innovation-driven development strategy being implemented. Vietnam's export standards can improve as the country faces TBT measures, utilizing various approaches to promote different aspects of products, from research and development to production, packaging, sales, and product improvement. Vietnam has established large specialized cultivation areas for agricultural exports. Many agricultural products, such as coffee, tea, and certain fruits, have been produced and processed according to procedures that meet

the TBT requirements imposed by partner countries. This result aligns with the "learning by doing" framework, whereby exporters can handle shipments more efficiently as their accumulated experience increases (Peterson et al., 2013). The empirical results also support the assumption that compliance with strict standards for imported goods will increase producers' fixed costs to a certain extent. However, once producers adjust their production processes to meet these standards, the imposition of new standards will not hinder exports to that market.

When examining the results of the coefficients for the variables SPS and QR, it is evident that the SPS measures applied by partner countries do not impact Vietnam's agricultural export turnover, as this coefficient is not statistically significant. This positive result can be explained by the fact that the quality of Vietnam's agricultural products is likely to meet the SPS requirements of partner countries. Furthermore, the SPS regulations of partner countries regarding agricultural products are not intended to restrict trade, but merely to ensure quality and food safety issues for imported goods consumed domestically. However, the most surprising result is that the QR measures are also not statistically significant. Although quantitative restrictions are known for their strong ability to hinder trade by directly limiting the volume of imports, they do not appear to affect Vietnam's agricultural exports. The model used is unable to capture the effect pattern based on this theory due to the characteristics of the dataset.

6 Conclusions and recommendations

The research results indicates that trade protection measures have affected the exports of agricultural products from Vietnam, including both tariff and non-tariff measures, with each measure having a different level of impact. Based on the above results, the paper proposes several recommendations for the government and businesses

For the government, several actions are crucial to support businesses and promote Vietnam’s agricultural exports.

Firstly, clear communication of trade protection regulations and standards must be ensured to businesses and the public. Providing practical guidance and assistance will help businesses navigate these challenges.

Secondly, enhancing free trade agreements (FTAs) is vital. The government should prioritize negotiations and persistently seek access to new markets, especially for agricultural products, to participate in regional value chains. It is essential to effectively implement commitments and engage in bilateral negotiations to overcome trade and technical barriers imposed by other countries.

Thirdly, diplomatic efforts should focus on sharing information about partner countries, including import policies, technology, and standards. This ensures Vietnam meets market requirements. Leveraging WTO technical assistance programs from countries like the UK, Australia, and the EU is critical in establishing Vietnam's technical standards and systems.

Fourthly, the government must support businesses in fully utilizing FTAs by disseminating rules of origin information and issuing certificates of origin. Proactive steps should be taken to assist in anti-dumping cases when they arise.

Fifthly, the government needs to deepen domestic businesses' integration into global supply chains by supporting them with tax incentives, human resource development, and market expansion. National trade fairs and exhibitions can boost brand promotion, market research, and competitiveness.

Finally, the government should direct efforts toward digital trade platforms to facilitate import-export activities. Promoting e-commerce alongside traditional trade methods is essential as

it aligns with global trends. Providing support for businesses on both domestic and cross-border e-commerce platforms will further strengthen Vietnam's export capabilities.

For busiensses, several key strategies should be adopted to maximize the benefits of trade opportunities.

First, businesses must capitalize on the tariff concessions and benefits provided by free trade agreements (FTAs). This requires continued investment in high-potential products that meet international standards, especially regarding rules of origin, to fully utilize the advantages of these agreements.

Second, for agricultural exports like fruits and vegetables, it is crucial to comply with strict pesticide residue and contaminant standards. Additionally, businesses should not only diversify their product lines but also expand into new export markets to avoid over-reliance on a single market.

Third, companies need to remain updated on tariff and non-tariff barriers, including anti-dumping, countervailing duties, and safeguard measures. These barriers are potential challenges during the export process, and businesses must be prepared with contingency plans to mitigate risks when they arise.

Fourth, establishing a robust system for documentation and accounting in line with international standards is critical. Companies should invest in training their accounting staff in international practices to ensure transparency and compliance, protecting themselves through proper management and reporting structures.

Fifth, businesses should develop a team proficient in market knowledge, languages, and legal expertise. Having skilled personnel, including legal consultants, will help companies navigate trade defense cases effectively. It is also beneficial to have experts with international

credibility in trade defense to participate in global organizations that resolve trade disputes.

This paper has contributed to the existing literature by providing important insights into how trade protectionist measures impact Vietnam's agricultural exports. However, it has some limitations. One key limitation is the restricted scope of the dataset, as it focuses on 20 trading partner countries, which cover around 71.54% of Vietnam's agricultural exports. Additionally, the study does not examine the specific effects of NTMs on individual agricultural product groups. These measures often have varied impacts on different products, and a more detailed analysis of their product-specific effects would add more depth to the research. To address these gaps, future research should expand the dataset to include a broader range of countries and markets. Moreover, a sector-specific approach could be adopted to analyze how various NTMs like SPS and TBTs impact different agricultural products, such as rice, coffee, or seafood to propose better recommendations. Additionally, the study could benefit from incorporating qualitative research methods, such as interviews with stakeholders or case studies of affected businesses, to provide practical insights and complement the quantitative findings. Lastly, examining the evolving role of emerging trade barriers, such as environmental standards and carbon credits, would offer valuable foresight into future trade dynamics.

References:

Abboushi, S. (2010). Trade protectionism: reasons and outcomes. *Emerald*, 20(5), 384–394. https://www.researchgate.net/profile/Suhail-Abboushi/publication/235283803_Trade_protectionism_Reasons_and_outcomes/links/57572ccb08aef6cbe35f52fe/Trade-protectionism-Reasons-and- outcomes.pdf

Albertoni, N. (2024). Trade protectionism in an uncertain and interconnected global economy. https://books.google.com.vn/books?hl=vi&lr&id=NqDUEAAAQBAJ&oi=fnd&pg=PP1&dq=newest+definition+of+trade+protectionism&ots=S9C7mFOB4Y&sig=czz-hlVvQpnrfZ4oY_1PupZtJs&redir_esc=y&fbclid=IwZXh0bgNhZW0CMTEAAR1tya585VDe3GwxEvkHD3AkHfWYeTrlbMBCcYtHWy7sVyypZkELvt1Rffc_aem_1KJzzsrdolb4rsuq3tA7ww#v=onepage&q=newest definition of trade protectionism&f=false

Amiti M., Redding S.J., & Weinstein D.E. (2019). The Impact of the 2018 Trade War on U.S. Prices and Welfare. In *National Bureau of economic research*. https://doi.org/10.3386/w25672

Anderson, J. E. (n.d.). A Theoretical Foundation for the Gravity Equation. *The American Economic Review*, 69, 106–116. https://www.jstor.org/stable/1802501

Antoine, B., & David, L. D. (2010). Economics of Export Taxation in a Context of Food Crisis A Theoretical and CGE Approach Contribution. *IFPRI Discussion Paper 00994, June 2010*.

Chen, Otsuki, & Wilson. (2008). Standards and export decisions: Firm-level evidence from developing countries. *An International and Comparative Review*, *17*(4), 501–523. https://www.tandfonline.com/doi/abs/10.1080/09638190802250027

Cong, P. T., Minh, D. N., & Nga, L. T. V. (2023). Assessing the impacts of non-tariff measures on the export of Vietnam's main agricultural and seafood products. *IJIRSS*, *6*(1), 72–79. https://doi.org/10.53894/ijirss.v6i1.1090

Doãn Kế Bôn, & Vũ Anh Tuấn. (17 C.E.). Tác động của bảo hộ thương mại đến xuất khẩu nông sản của Việt Nam và một số kiến nghị. *The 3rd International Conference Proceedings: Commerce and Distribution - CODI 2022*, 2022.

Đoàn Ngọc Thắng, & Lê Thị An. (2019). *Tác động của các biện pháp phi thuế quan tới xuất khẩu của Việt Nam*. https://drive.google.com/file/d/1YJDpbcE-xIHBi9_Y0mCHKtXl3krrHriK/view

Đồng Văn Chung, Phạm Thanh Hà, & Trương Quang Hoàn. (2018). Thương mại giữa Việt Nam với các nền kinh tế Đông Bắc Á: Một cách tiếp cận từ mô hình trọng lực. *Những Vấn Đề Kinh Tế và Chính Trị Thế Giới*, *265*(5), 15. https://sti.vista.gov.vn/tw/Lists/TaiLieuKHCN/Attachments/273330/CVv132S52018003.pdf?fbclid=IwAR0fUCIkWuJV8u54mM_1axHIrSlJTlKi0c9_VDvFQM5XEZl_xSoISsO0lkI

Dong, Y., & Zhu, Y. (2015). Impact of SPS measures imposed by developed countries on China's tea export—A perspective of differences in standards. *Economics and Finance*, *2*(4), 160–169. https://doi.org/10.11114/aef.v2i4.1175

E. Yalcin, Felbermayr, G., & Kinzius, L. (2017). Hidden protectionism: Non-tariff barriers and implications for international trade. *Ifo Center for International Economics*, 8–18.

Fajgelbaum Pablo D, Goldberg Pinelopi K, Kennedy Patrick J, & Khandelwal Amit K. (2020). The Return to Protectionism. *The Quarterly Journal of Economics*, *135*(1), 1–55. https://doi.org/10.1093/qje/qjz036

Farzad, T., & Wallace, E. T. (2018). *Impacts of Possible Chinese Protection on US Soybeans*.

Felbermayr, G., & Sandkamp, A. (2020). The trade effects of anti-dumping duties: Firm-level evidence from China. *Science Direct*, *122*.

Ganslandt, M., & Markusen, J. R. (2001). *Standards and Related Regulations in International Trade: A Modeling Approach* (8436). https://doi.org/10.3386/w8346

Ghodsi, Gruber, & Stehrer. (2016). *Estimating Importer-Specific Ad Valorem Equivalents of Non-Tariff Measures*. https://www.econstor.eu/handle/10419/203994

Hiệp Định Thực Thi Điều vi Của Hiệp Định Chung về Thuế Quan và Thương Mại – GATT (1994). https://thuvienphapluat.vn/van-ban/Thuong-mai/Hiep-dinh-Thuc-thi-Dieu-VI-cua-Hiep-dinh-chung-ve-Thue-quan-Thuong-mai-GATT-1994-15002.aspx

Hiệp Định về Trợ Cấp và Các Biện Pháp Đối Kháng. https://thuvienphapluat.vn/van- ban/Hiệp định về trợ cấp và các biện pháp đối kháng. https://thuvienphapluat.vn/van-ban/Thuong-mai/Hiep-dinh-217-WTO-VB-tro-cap-va-cac-bien-phap-doi-khang-14958.aspxThuong-mai/Hiep-dinh-217-WTO-VB-tro-cap-va-cac-bien-phap-do

Hoekman, B., & Nicita, A. (2011). Trade Policy, Trade Costs, and Developing Country Trade. *Science Direct*, *39*(12), 2069–2079. https://doi.org/10.1016/j.worlddev.2011.05.013.

Lê Đình Quý. (n.d.). Tác động của chiến tranh thương mại Mỹ - Trung đến kinh tế toàn cầu và Việt Nam. Trung Tâm WTO. https://trungtamwto.vn/upload/files/an-pham/258-tai-lieu-tham-khao/6. Tac dong cua chien tranh thuong mai My Trung den kinh te toan cau va Viet Nam.pdf

Lê Hoàng Quỳnh. (2020). Bảo hộ thương mại và giải pháp cho xuất khẩu của Việt Nam. *Tạp Chí Công Thương*. https://tapchicongthuong.vn/bai-viet/bao-ho-thuong-mai-va-giai-phap-cho-xuat-khau-cua-viet-nam-70626.htm

Ling, J. I. A. N. G. (2013). Measurement of the Impacts of the Technical Barriers to Trade on Vegetable Export of China: An Empirical Study Based on the Gravity Model. *International Business and Management*, 7(2), 20–25.

Linh Thanh. (2020). Covid-19 đã kích động chủ nghĩa bảo hộ phát triển. Tạp Chí Kinh Tế và Dự Báo.

https://kinhtevadubao.vn/covid-19-da-kich-dong-chu-nghia-bao-ho-phat-trien-11060.html
Lương Thanh Hải. (2022). Những vấn đề về xuất khẩu nông sản của Việt Nam (Phần 1). *Viện Nghiên Cứu Chiến Lược, Chính Sách Công Thương - Bộ Công Thương*. https://vioit.org.vn/vn/chien-luoc-chinh-sach/nhung-van-de-ve-xuat-khau-nong-san-cua-viet-nam--phan-1--4763.4050.html
Nguyễn Hạnh. (2020). GDP của Việt Nam tăng 2,91%, thuộc nhóm tăng trưởng cao nhất thế giới. *Viện Chiến Lược và Chính Sách Tài Chính*. https://mof.gov.vn/webcenter/portal/vclvcstc/pages_r/l/chi-tiet-tin?dDocName=MOFUCM187987
Nguyen, T. T. H., Vu, T. T. H., Phan, T. C., & Dat, P. M. (2022). Evaluating the Effect of Non-Tariff Measures on Agriculture Export - A case study of Vietnam's exports to the European Union. *RES MILITARIS*, *12*(4), 15. https://drive.google.com/file/d/1c4EL3_Oed1Ge5tiIB4iUguyZipGDxheR/view?usp=sharing
Nguyễn Thị Hương. (2020). *Họp báo công bố số liệu thống kê kinh tế – xã hội quý IV và năm 2020*. https://www.gso.gov.vn/du-lieu-va-so-lieu-thong-ke/2020/12/hop-bao-cong-bo-so-lieu-kinh-te-xa-hoi-quy-iv-va-nam-2020/
OECD. (1985). Costs and Benefits of Protection. In *Organization for Economic Cooperation and Development*.
P.R.Krugman, & M.Obstfeld. (2007). *International economics: Theory and policy Financial Theory and Practice* (Vol. 31, Issue 3). https://hrcak.srce.hr/file/30448
Peterson, E., Grant, J., Roberts, D., & Karov, V. (2013). Evaluating the Trade Restrictiveness of Phytosanitary Measures on U.S. Fresh Fruit and Vegetable Imports. *American Journal of Agricultural Economics*, 95(4), 842–858. https://econpapers.repec.org/article/oupajagec/v_3a95_3ay_3a2013_3ai_3a4_3 ap_3a842-858.htm
Phương Lan. (2023). Xúc tiến thương mại: Khơi "dòng chảy" xuất khẩu nông sản. *Trung Tâm WTO*. https://trungtamwto.vn/an-pham/24742-xuc-tien-thuong-mai-khoi-dong-chay-xuat-khau-nong-san
Roye B. (2018). The resurgence of protectionism: potential implications for global financial stability. *Financial Stability Review*. https://www.ecb.europa.eu/pub/financial-stability/fsr/special/html/ecb.fsrart201811_2.en.html
Solleder, O. (2013). Trade Effects of Export Taxes. In *Graduate Institute of International and Development Studies Working Paper, No: 08/2013*. https://www.econstor.eu/handle/10419/77436
Tố Uyên. (2024). Xung đột Nga - Ukraine khiến kinh tế toàn cầu phân cực, quy tắc thương mại đa phương bị đe dọa. Thời Báo Tài Chính Việt Nam. https://thoibaotaichinhvietnam.vn/xung-dot-nga-ukraine-khien-kinh-te-toan-cau-phan-cuc-quy-tac-thuong-mai-da-phuong-bi-de-doa-145586.html
Tinbergen. (1962). Economic Development and Co-operation in Africa. *Shaping the World Economy*, 195–311. https://repub.eur.nl/pub/16826/Appendices.pdf
Trần Thị Thu Hiền. (2023). Vai trò của xuất khẩu nông sản trong nền kinh tế. *Viện Nghiên Cứu Chiến Lược, Chính Sách Công Thương - Bộ Công Thương*. https://vioit.org.vn/vn/chien-luoc-chinh-sach/vai-tro--cu-a-xua-t-kha-u-nong-sa-n-trong-ne-n-kinh-te--5445.4050.html
Trung tâm WTO. (2020). *Phòng vệ thương mại và "sự thờ ơ" của doanh nghiệp Việt*.
Trung tâm WTO. (2023a). *Doanh nghiệp phải làm gì để ứng phó với rủi ro từ phòng vệ thương mại?* https://chongbanphagia.vn/doanh-nghiep-phai-lam-gi-de-ung-pho-voi-rui-ro-tu-phong-ve-thuong-mai-n27087.html
Trung tâm WTO. (2023b). *Được công nhận là nền kinh tế thị trường ý nghĩa gì với Việt Nam?* file:///C:/Users/ADMIN/Downloads/TTWTO VCCI - (Tin tức) Được công nhận là nền kinh tế thị trường ý nghĩa gì với Việt Nam_.pdf
UNCTAD. (n.d.). *Non-tariff measures* (NTMs). Retrieved March 20, 2024, from https://unctad.org/topic/trade-analysis/non-tariff-measures
United Nations. (2023). Key Statistics and Trends in Trade Policy 2022. *UNCTAD*, 35. https://unctad.org/system/files/official-document/ditctab2023d2_en.pdf
Viet, K. N., & Thanh, T. L. T. J. J. o. G. S. (2014). *Green trade barriers and Vietnam's agricultural and fishery export*. 5(2), 69–80.
Vũ Huy Hùng. (2024). *Thị trường tín chỉ Carbon: Lý luận và giải pháp*. https://vioit.org.vn/vn/chien-luoc-chinh-sach/thi-truong-tin-chi-carbon---ly--luan-va--giai-pha-p-5819.4050.html
Zhang, Z. (2014). Trade Protectionism and International Trade Policy Study. Frontier in Business, Economics and Management, 14(2), 5.

Editorial Postscript

Journal of Sustainability at the Chiba University of Commerce Volume 1, Separate Volume

This volume contains papers presented at the international symposium “Sustainable Development and ESD” held at Chiba University of Commerce on September 23, 2024. These papers have been peer reviewed. The peer review team is as follows:

Dr. Takao TERANO, Director, Research Institute, Chiba University of Commerce

Dr. Ryohei KAGEURA, Vice-director, Research Center for Sustainability, CUC

Dr. Takako HASHIMOTO, Research Center for Sustainability, CUC

Dr. Thuy NGUYEN, Research Center for Sustainability, CUC

Journal of Sustainability at the Chiba University of Commerce, Volume 1, Separate Volume

ISSN 2759-7067
Published on March 14, 2025
Edited by Research Center for Sustainability, Chiba University of Commerce
Published by Research Center for Sustainability, Chiba University of Commerce
1-3-1 Konodai, Ichikawa-shi, Chiba 272-8512 JAPAN

Journal of Sustainability at the Chiba University of Commerce

Research Center for Sustainability
Chiba University of Commerce