

Effect of new generation Ftas on sustainable product innovation: empirical evidence from vietnamese listed textile firms

Efecto de los TLC de nueva generación en la innovación de productos sostenibles: evidencia empírica de empresas textiles vietnamitas que cotizan en bolsa

Efeito de ALCs de nova geração na inovação de produtos sustentáveis: evidências empíricas de empresas têxteis vietnamitas listadas

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Abstract

Introduction: This paper is the product of the investigation "Effect of new generation FTAs on sustainable product innovation: Empirical evidence from Vietnamese listed textile firms" developed at Thuongmai University (TMU) and Hanoi University of Industry (HaUI) between 2021 and 2023. The COVID-19 pandemic has significantly changed consumption habits towards cutting unnecessary spending on fashion products, and focusing on sustainable products. Therefore, greener textile innovation is currently a rapidly growing trend, bringing new sales and flexible production capabilities. The article presents the impacts of new generation free trade agreements (FTA) like the European Union-Vietnam Free Trade Agreement (EVFTA) and the Comprehensive and Progressive Trans-Pacific Partnership (CPTPP) on sustainable textile product innovation.

Problem: Greener production is dominant in several export industries. After the COVID-19 pandemic, the shift from fast fashion to sustainable fashion is increasingly urgent.

Objective: The aim of this study is to examine both the direct and indirect impacts of FTA expectations on sustainable product innovation capability (SPIC) via two mediating variables such as environmental regulations and CEO perception.

Methodology: The study involves exploratory research, using PLS-SEM to test the relationships in the model.

Results: Both Environment Regulation and CEO perception play an important role as partial mediation in the relationship between FTA expectation and sustainable product innovation capability.

Conclusion: This project seeks to generate a change in the behavior, towards efficiency and modification of user practices, to favor the sustainability standard of textile and garment firms.

Originality: Through this research, integrated and sustainable textile and garment management strategies are formulated for green marketing strategies in Vietnam.

Limitations: The lack of information provided by the municipality and limited samples.

Keywords: CEO perception, FTA expectation, Environmental regulation, Sustainable product innovation capability.

Resumen

Introducción: Este documento es el producto de la investigación "Efecto de los TLC de nueva generación en la innovación de productos sostenibles: evidencia empírica de empresas textiles cotizadas en Vietnam" desarrollada en la Universidad de Thuongmai (TMU) y la Universidad de Industria de Hanoi (HaUI) entre 2021 y 2023. La pandemia de COVID-19 ha cambiado significativamente los hábitos de consumo hacia la reducción de gastos innecesarios en productos de moda y centrándose en productos sostenibles. Por lo tanto, la innovación textil más ecológica es actualmente una tendencia de rápido crecimiento, que genera nuevas ventas y capacidades de producción flexibles. El artículo presenta los impactos de los acuerdos de libre comercio (TLC) de nueva generación como el Acuerdo de Libre Comercio entre la Unión Europea y Vietnam (EVFTA) y la Asociación Transpacífica Integral y Progresista (CPTPP) en la innovación de productos textiles sostenibles.

Problema: La producción más ecológica es dominante en varias industrias de exportación. Después de la pandemia de COVID-19, el cambio de la moda rápida a la moda sostenible es cada vez más urgente.

Objetivo: El objetivo de este estudio es examinar los impactos directos e indirectos de las expectativas del FTA en la capacidad de innovación de productos sostenibles (SPIC) a través de dos variables mediadoras, como las regulaciones ambientales y la percepción del CEO.

Metodología: El estudio involucra una investigación exploratoria, utilizando PLS-SEM para probar las relaciones en el modelo.

Resultados: Tanto la regulación ambiental como la percepción del CEO juegan un papel importante como mediación parcial en la relación entre la expectativa de TLC y la capacidad de innovación de productos sostenibles.

Conclusión: Este proyecto busca generar un cambio de comportamiento, hacia la eficiencia y modificación de las prácticas de los usuarios, para favorecer el estándar de sustentabilidad de las empresas textiles y de confección.

Originalidad: a través de esta investigación, se formulan estrategias integradas y sostenibles de gestión de textiles y prendas de vestir para estrategias de marketing verde en Vietnam.

Limitaciones: La falta de información proporcionada por el municipio y muestras limitadas.

Palabras clave: percepción del CEO, expectativa de TLC, regulación ambiental, capacidad de innovación de productos sostenibles.

Resumo

Introdução: Este artigo é o produto da investigação “Efeito de FTAs de nova geração na inovação de produtos sustentáveis: evidências empíricas de empresas têxteis vietnamitas listadas” desenvolvida na Universidade de Thuongmai (TMU) e na Universidade de Indústria de Hanói (HaUI) entre 2021 e 2023. A pandemia de COVID-19 mudou significativamente os hábitos de consumo para cortar gastos desnecessários em produtos de moda e focar em produtos sustentáveis. Portanto, a inovação têxtil mais verde é atualmente uma tendência em rápido crescimento, trazendo novas vendas e capacidades de produção flexíveis. O artigo apresenta os impactos de acordos de livre comércio (FTA) de nova geração, como o Acordo de Livre Comércio União Europeia-Vietnã (EVFTA) e a Parceria Transpacífica Abrangente e Progressiva (CPTPP) na inovação sustentável de produtos têxteis.

Problema: A produção mais ecológica é dominante em vários setores de exportação. Após a pandemia do COVID-19, a mudança da moda rápida para a moda sustentável é cada vez mais urgente.

Objetivo: O objetivo deste estudo é examinar os impactos diretos e indiretos das expectativas do FTA na capacidade de inovação de produto sustentável (SPIC) por meio de duas variáveis mediadoras, como regulamentações ambientais e percepção do CEO.

Metodologia: O estudo envolve pesquisa exploratória, utilizando PLS-SEM para testar as relações no modelo.

Resultados: Tanto a Regulação Ambiental quanto a percepção do CEO desempenham um papel importante como mediação parcial na relação entre a expectativa do FTA e a capacidade de inovação de produtos sustentáveis.

Conclusão: Este projeto busca gerar uma mudança de comportamento, no sentido da eficiência e modificação das práticas do usuário, para favorecer o padrão de sustentabilidade das empresas têxteis e de confeções.

Originalidade: Através desta pesquisa, estratégias integradas e sustentáveis de gestão têxtil e de vestuário são formuladas para estratégias de marketing verde no Vietnã.

Limitações: A falta de informações fornecidas pelo município e amostras limitadas.

Palavras-chave: Percepção do CEO, Expectativa do FTA, Regulação ambiental, Capacidade de inovação de produtos sustentáveis.

1. INTRODUCTION

Since the COVID-19 pandemic, the fashion consumption trend has been changing rapidly. Previously, there was a trend of fast fashion products with new collections launched every month rather than seasons, which urged fashion brands to come up

with new designs frequently in order to meet demands and develop new collections rapidly at lower costs. Larger retailers and brands also tend to develop target-market collections and outsource them to low-cost labor countries.

However, the COVID-19 pandemic has significantly changed consumption habits, by cutting unnecessary spending on fashion products, and focusing on sustainable products. Therefore, greener textile innovation is currently a rapidly growing trend, bringing new sales and flexible production capabilities: Textiles and garments with fiber from organic coir, banana, jute or cellulose, combined with energy-saving processing methods using clean energy or organic origins such as dyes from leaves and fruits (mulberry, turmeric, indigo, etc.) extracted with boiling water or over time, or renewable products such as recycled PE fiber, and environmental-friendly dyeing technology without water.

There have been numerous studies on sustainable product innovation over the past decade. In fact, sustainable product innovation has been considered as one of the UN's 17 sustainable development goals; to ensure sustainable consumption and production patterns (12th goal). Sustainable product innovation involves creating new or improved products to generate long term social and environmental benefits while creating economic profits for firms. That definition is stated by Richard Adams, who reviewed academic and industrial studies on the topic. Through sustainable product innovation, companies can invent and offer novel products that directly contribute to achieving sustainability. Research on success factors for sustainable product innovation plays a vital role in implementing sustainable development objectives of companies. A recent review of the literature on success factors for sustainable product innovation found that environmental regulations and pressure from suppliers and consumers are among the most important determinants on sustainable product innovation [1].

According to Anh (2021) [1], under the FTAs that Vietnam has signed, textile and garment enterprises are greatly expected to benefit from tariff reductions. The recently approved European Union-Vietnam Free Trade Agreement (EVFTA) has long been awaited by textile enterprises since this is a high value-added market with great demand for quality products, diversified models, and also a traditional market with a steady annual growth rate.

New generation FTAs may have many positive effects on sustainable fashion products. Firstly, by providing a greater degree of free trade, fashion designers can easily transform their commodity materials and other quality components to create products that are more durable. Secondly, the agreements also provide designers with the opportunity to incorporate eco-friendly materials such as recycled, sustainable, and eco-friendly fabrics into their fashion products. This can also help prevent

environmental pollution caused by unsustainable products. Finally, the new generation FTAs offer designers the opportunity to cut their costs significantly.

The New generation FTAs are a new way to ensure a more sustainable trade process in the region. These agreements involve participating countries in the region for a more sustainable trading system and the minimization of trade barriers. The agreements also help ensure that organizations adopt international regulations on transport, packaging, and storage.

This also gives fashion manufacturers in the region the opportunity to develop more sustainable fashion products. The new generation FTAs provide fashion manufacturers with regulations on quality, the environment, and user safety. Manufacturers can work with regional distributors to make fashion goods more sustainable and safer for users. The agreements also provide the guidelines for fashion manufacturers and distributors to work together to develop more sustainable fashion products. The textile industry is a classic illustration of a buyer-determined value chain; creating the final product requires go through many stages and production activities are often carried out in many locations. Manufacturers with famous brands, large wholesalers and retailers play a vital role in establishing production networks and shaping mass consumption through strong brands and their reliance on global outsourcing strategies to satisfy this need. Apart from business ideas and opportunities detected in the value chains of strategic productive sectors, ideas for projects can be formulated and presented to fill those technological demands and needs [2].

With the Comprehensive and Progressive Trans-Pacific Partnership (CPTPP) Agreement, the textile industry is expected to enjoy the most benefits from the Canadian and Australian market. While the other FTAs that Vietnam participated in only apply the rule to one to two stages, under the CPTPP, the principle of three stages is applied, including fiber making, weaving and finishing. These stages must all be carried out in member countries in the CPTPP Agreement. Rules of origin “yarn-forward” is also the weakness of the Vietnamese textile and garment industry with the importation of up to 80% of fabric, of which nearly 50% are imported from China, 18% are imported from South Korea, and 15% from Taiwan (China), while China is not a CPTPP participant. Under pressure from the rules of origin of EVFTA and CPTPP, to enjoy tax incentives, the domestic textile industry has to invest in the construction of factories, producing raw materials, weaving, and dyeing materials, etc. to actively control their inputs. However, the current hindrance is that some localities are unwelcome to the textile industry, especially dyeing firms, because it can cause environmental pollution. Therefore, the local governments tend not to grant permission to build manufacturing plants for raw materials for the textile and garment industry [3].

According to experts, the textile and apparel sector is now developing rapidly but still faces certain weaknesses in terms of environmental protection and compliance with the rules of origin of products. Therefore, in order to make the most of the tariff incentives from FTAs, Vietnamese businesses need to immediately invest in enhancing the product value and quality, and ensure compliance with labor and environmental standards to improve their competitiveness.

With this in mind, the aim of this study is firstly to examine both the direct and indirect impacts directly as well as indirectly the relationship of FTA expectation on sustainable product innovation capability (SPIC) via 2 two mediating variables such as environmental regulations and CEO's perception. Secondly, the authors suggest comprehensive solutions for accelerating and boosting sustainable product innovation adaptations in the textile and garment industry.

This paper is divided into 4 sections. Section 1 gives a brief overview of the research context, the second section provides a systematic literature review on Sustainable textile product innovation, Textile Innovation capability, New generation FTAs and how these relate to sustainable product innovation. In the third section, measurement items and research hypotheses are presented, and the authors propose a new diamond model in this section. The research findings are presented in Section 4, and some policy implementations and conclusions are drawn in the final section.

2. LITERATURE REVIEW

Sustainable textile product innovation

According to the OECD glossary of statistical terms "A product innovation is the introduction of a good or service that is new or significantly improved with respect to its characteristics or intended uses. This includes significant improvements in technical specifications, components and materials, incorporated software, user friendliness or other functional characteristics" [4].

Sustainability is recognized as a trending subject in the textile, clothing, and leather (TCL) industry [5]. Many textile manufacturers perceive renewable energy as a sustainable source. In terms of environmentally sustainable textile innovations, previous research has confined its focus to resources, and materials, [6], sustainable improvements along the supply chain, such as cleaner production [7], digital innovations [8], and also sustainable fashion design practices [9].

Textile Innovation capability

Innovation capabilities are defined by Crossan and Apaydin [10] to refer to the ability of enterprises to create, inherit and use something new that brings added value to the economic and social sector; the ability to renew and extend products, services and markets; the ability to develop new production methods; and the ability to set new management systems. According to Terziovski [11], Innovation capabilities are generally understood as “technical, design, production, administrative and commercial activities that are involved in the marketing of a new (or improved) product or concerned with the first application of commercial activities to a process or a new (or improved) product”. Thus, the capacity for innovation can be seen as related to the improvement and/or creation of new things for the enterprise and has the potential to improve the financial performance of enterprises in the market. In the context of textile and garment companies, innovation capabilities are considered as the ability to optimally use the resources of the enterprise to create, innovate and improve business processes and deliver products and services.

New generation FTAs

Vietnam has further participated in new-generation free trade agreements (FTA) like the European Union - Vietnam Free Trade Agreement (EVFTA), the Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP). Since signing these FTAs, there has been a huge change in socio-economic activities, especially with regards to textiles and garments. The industry has been a leading exporter in Vietnam, and thus, the country has become one of the leading textile-exporting countries worldwide. New generation FTAs are expected to bring huge opportunities to Vietnam’s textile and apparel sector to boost exports and expand markets. However, these FTAs also pose challenges, forcing the textile and apparel sector to make changes in many aspects including investing in sustainable production that meets market standards.

The relationship between new generation FTAs and sustainable product innovation

When participating in a new generation FTA, a company must comply with the laws and regulations. Concerning laws and regulations, studies indicate that their intensity exerts a significant pressure for processes and products to be developed to minimize environmental impacts. Broadly speaking, they point out that the establishment of

rules and codes of conduct by the government is a significant premise of eco-innovations. Moreover, the findings confirm that, in addition to regulating them, it is also essential to supervise a companies' sustainable actions. In particular, the use of control mechanisms through environmental certifications improves the performance of green product development. Research also suggests that the establishment of policies to reduce emissions favors the development of green products. Finally, the political-legal frameworks that impose punishments for organizations that are not environmentally responsible have positively boosted process and product adaptations [1]. Therefore, there is an important relationship between regulations and laws of new generation FTAs and sustainable product innovation.

2. METHODOLOGY

In the methodology part, firstly, measurement items are determined in accordance with the proposed model. In the second stage, the data collection procedure is presented, and the PLS-SEM test is conducted.

2.1 Research hypotheses

Impacts of Expected opportunities from new generation FTAs on Product innovation capability

The entry of the new generation FTAs into Vietnam creates opportunities as well as threats for Vietnamese firms. In this study, the expected new generation FTA opportunities are defined as the expectation of benefits that the new generation FTA provides for the firms relative to its costs. The attention-based view of the firm [12] argues that the focus of a firm on issues happening in the market will affect the behavior of the firm. The focus of the firm on the new generation FTA is a selective focus. The firm will evaluate the balance between benefits and costs generated by this issue [12]. Organizational expectation theory [13] reveals that when a firm expects a business opportunity, it is likely to evaluate the opportunity as well as react to it, according to its expectation.

When a firm expects a positive outcome, i.e., the benefits given by the new generation FTAs surpass its costs, the expectation of the firm about opportunities given by the new generation FTAs is high and the firm is prepared to take advantage of these opportunities. Therefore, it could be expected that the firm would utilize its resources to enhance its innovation capability to satisfy its more sophisticated customers.

These capabilities are directly related to its customers, competitors, and business partners. Thus, the first research hypothesis is stated as follows:

H1: There is a positive relationship between expected new generation FTAs and product innovation capability.

Impact of environmental regulations on product innovative capability

Domestic environmental regulations promote enterprises to apply strategies and relevant law enforcement measures to improve environmental performance. Domestic regulations and corporate environmental mandates are the two main sources of pressure [14]. Furthermore, government regulations play an increasingly important role in increasing corporate environmental awareness [15]. Compulsory requirements from government policies, regulations and pressure from stakeholders are the factors that drive enterprises towards the application of green production or the application of environmental management systems. The legal provisions aimed at protecting the safety and human health of the EU with textiles are contained in the Clothing Safety Act, which prohibits the import and sale of textile products containing prohibited substances. The most important of the EU's legal regulations to protect human health and safety is the European Parliament and Council EC regulation 1907/2006 on Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH). This environmental regulation will create a close relationship between business strategies and greening strategies in enterprises. Therefore, the second research hypothesis is stated as follows:

H2: There is a positive relationship between environmental regulation and product innovation capability

Impact of CEO perception on product innovation capability

Based on the literature review, we argued that CEO perception and characteristics are the main drives that directly affect innovation capability. According to Le and Lei [16], the effect of leader characteristics on innovation capability by means of idealized influence, will be able to persuade and motivate employees about the need to implement change and innovation. This also ensures that employees will support and have positive reactions to innovation efforts stemming from their transformational leaders [17]. In addition, innovation capability was affected by transmitting inspirational

motivation, transformational leaders foster employees' enthusiasm to fulfill their duties and organizational goals beyond expectations [17, 18].

In this study, the authors assume that the perception of a CEO – a leader of a joint stock company, can have a direct impact on its product innovation capability. Although there has been a positive correlation between leader perception and innovation capability, empirical evidence on the relationship between a CEO perception and type of innovation capabilities, namely product innovation, is hardly found. To investigate the relationship among the construct, the researchers propose the following research hypothesis:

H3: There is a positive relationship between CEO perception and product innovation capability

2.2. Measurement items

For the measurement of SPI-related constructs discussed in the research model, 15 items are determined, as proposed by previous and current studies in the literature, in accordance with the sub-dimensions mentioned in the previous section on SPI. Items identified within prominent studies, which use the items clearly in their studies, are assessed. Evaluating the distribution of these 15 items in terms of sustainability dimensions, there are 3 items for the new generation FTAs [11, 12], each latent constructs of environmental regulation; as for CEO's perception and sustainable product innovation capability, there are 4 items [13-17]. The measurement questions are determined according to the result of the literature research are evaluated by two academics studying sustainable manufacturing and supplier chain and two manufacturing managers from the area of production improvement, and R&D in terms of understandability.

2.3. PLS-SEM

EFA could be defined as a classical formal measurement model that is used when both observed and latent variables are assumed to be measured at the interval level. EFA in PLS-SEM is represented by outer loading. The outer loading value in SmartPLS is the correlation coefficient between the items (indicator) and the latent variable (also known as factor or construct) in the PLS-SEM model. The outer loading value shows the strength and direction of the relationship between the items and latent variables. The outer loading coefficient can be used to evaluate the quality of the items of a reflective scale factor. If an item has a low outer loading, it can be shown that the item

does not contribute much to the corresponding factor and may be excluded from the model. The outer loading value in SmartPLS can range from 0 to 1, with a value of 1 representing a perfect relationship between the item and latent variables, and the value closes to 0 indicating a weak or no relationship between these two variables.

The PLS-SEM methodology has some procedures which should be followed and two stages are performed: measurement model and structural model.

In the first stage, several procedures are conducted to test the internal consistency, reliability, and validity of measurement items. In this regard, the measurement items are tested for reliability and validity, and the relationships between latent variables and measured variables are evaluated, and reliability and validity criteria are to be met. For this purpose, factor loadings, Cronbach's alpha, and combined reliability (CR) values are examined to measure the internal consistency and reliability of the scale. If Cronbach's alpha and CR values are equal to or higher than 0.70, the scale is considered reliable.

For Cronbach's alpha, this value of 0.60 in exploratory studies is also an acceptable level. However, to test the convergent validity, the average variance (AVE) of each latent variable is evaluated and the AVE value must be greater than 0.50 [19].

Moreover, there are two approaches to evaluate discriminant validity, which is another important validity. The first is the evaluation of cross-loadings, and the second is the Fornell and Larcker Criterion [20] method, which is more conservative. To ensure Fornell and Larcker's discriminant validity, the square root value of the AVE of each construct must be greater than the correlation values between other constructs. While examining the cross-loadings, external loadings on a construct should be higher than all cross-loadings of other constructs.

2.4 Dataset and sample

The study is an exploratory research, using the Partial Least Squares Structural Equation Modeling (PLS-SEM) to test the relationships in the model. SEM is a theory-based multivariate statistical analysis method that is used to simultaneously test causal relationships between variables. PLS-SEM is also preferred because it is suitable for abnormal data and smaller sample sizes [19] instead of covariance-based SEM.

This study develops a dataset to collect information on recent sustainable textile product innovation. In order to fill the dataset, the research uses a snow ball technique, so various sources are taken into account such as home page of Vietnamese listed textile firms, Vietnam Textile and Apparel Association, and other websites from CPTPP, EVFTA.

3. RESULTS

3.1 Introduction to Vietnamese’s textile listed firms

According to Vietstock.vn website, there are 34 textile listed firms, including 5 firms in HOSE, 4 firms in HNX, and 25 firms in Upcom. In terms of firm size, there have been 5000 large and small textile and garment enterprises operating in Vietnam, quite a few are large FDI enterprises, accounting for more than 60% export market share. With about 34 listed textile and garment enterprises, the sample cannot represent the overall picture of the industry. The most prominent among listed companies are Vietnam Textile and Garment Group (VGT), Viet Tien Garment (VGG), Thanh Cong Textile (TCM), and a big name in the yarn industry is Century Yarn (STK).

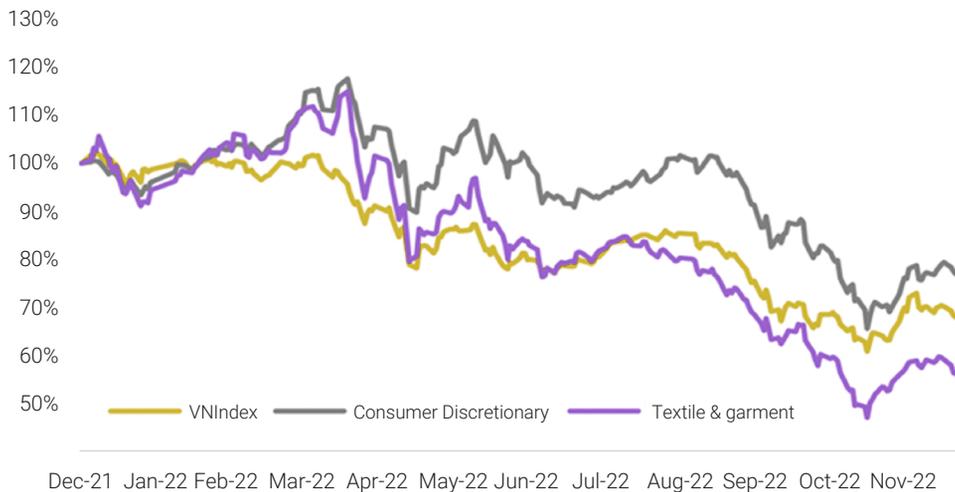


Figure 1. Stock prices of Vietnamese textile listed companies in 2022
Source: Bloomberg & SSI research

3.2 Findings of Firm’s perception on an essential quality standard for textile and apparel with new generation FTAs

In Vietnamese textile listed firms, export turnover comes mainly from two principal markets such as EU and US. Export turnover from the US market accounts for nearly one-half, EU market takes the 2nd position with 40%. This result also reflects the correct selection of survey subjects suitable for the research.

Firm's perception on the essential quality standard for textile and apparel in the EU and US markets

Enterprises have identified the basic quality standards for garment products in the US and EU markets, especially enterprises that have been conscious of technical standards from these two important markets. This is to proactively meet new standards. Enterprises have been relatively proactive in identifying barriers, but their awareness of these barriers is not consistent.



Figure 2. Firm's perception on technical barrier to the US market.
 Source: own work

In the face of many difficulties due to new technical standards, enterprises have actively improved their product quality by various measures, from strict control of input materials to ensuring the right quality and quantity, as well as innovation in garment technology. The survey shows that the majority of garment enterprises invest in importing sewing lines and equipment to serve the modern garment industry in order to increase their labor productivity and improve the quality of garment products.

The survey results show that about 80% to 90% of enterprises identify technical barriers related to quality and main product attributes that the US is applying to imported garments. One of the big challenges of garment enterprises is to be proactive and control the source of input materials. As stated, domestic input materials can only meet about 30% of an enterprise's needs, so most businesses have to order from abroad, most of which are from China. To overcome this challenge, with Circular No.32

of the Ministry of Industry and Trade, businesses have also been more interested in testing input materials to ensure that they do not contain hazardous substances that are banned by the US and EU.

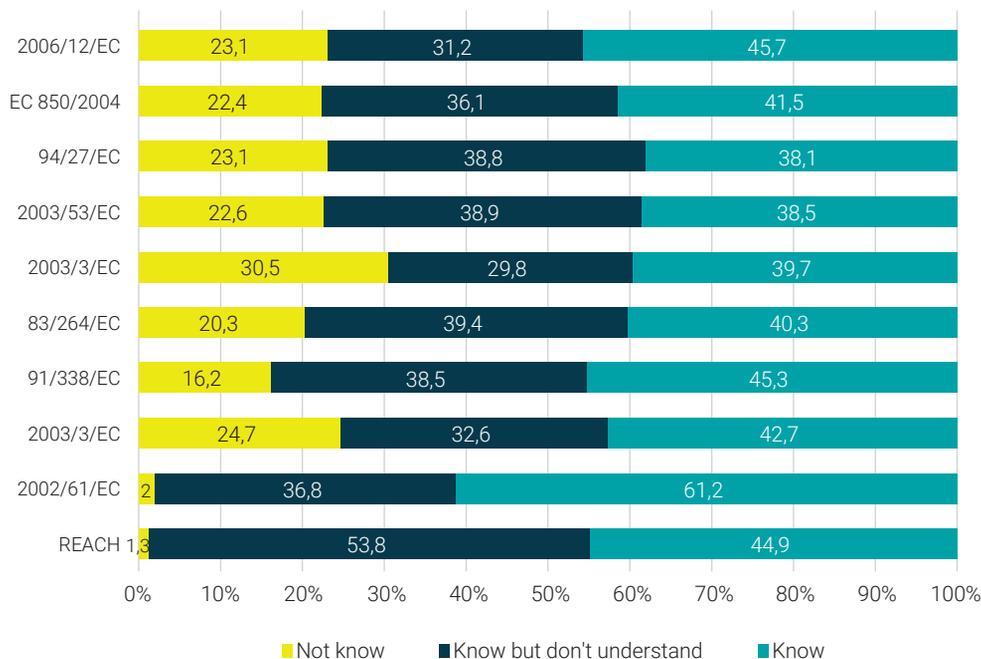


Figure 3. Firm’s perception on technical barriers to the EU market.

Source: Own work

The Law on Improving the Integrity of Consumer Products 2008 (CSPSIA 2008) is well understood by enterprises, with 68.5% of them comprehending and partially comprehending, and only 8.3% of the respondents not comprehending. Other important regulations related to the US imports include the Heat Calculation of Fabrics Act 16 CFR 1610, the All-Fire Children’s Sleepwear Act (16CFR 1615/1616), the Federal Hazardous Substances Act (FHSA), state-level laws and regulations are also well known by businesses; less than 15% of the survey questionnaires returned with results indicating a lack of understanding. These are also signs to realize that the formula of enterprises can default to Vietnam for barriers in the US market.

The survey results pertaining to “perceived barriers to the EU market” also show that most businesses are aware of the most basic and popular regulations such as REACH (less than 2% of the respondents do not know about this). However, for the more specific and deeper regulations on standards for the EC commodity group in this market, less than 50% of enterprises know, and less than 40% know about it but are unsure of the specifics. The EC regulatory document (2003/3/EC) is unknown to

more than 30% of the respondents. The survey also shows that Vietnamese garment enterprises still do not understand and fully understand the EU market's blocking regulations for imported garments. This can be partly because enterprises can export to the US market and some other markets but do not export to the EU market, so they do not know these regulations and vice versa.

With regulations on product safety, there are still high temperatures of waste, formaldehyde, and phthalates in many products, which may prevent enterprises from meeting the strict standards of the US and EU. Many legal systems have the same regulations on technical standards, so businesses do not fully grasp the prohibited hazardous substances as well as the conformity assessment process according to the regulations of these two markets. The very restrictive regulations of the 2008 Consumer Product Safety Improvement Act (CPSIA) of the US or REACH of the EU are mainly aimed at child products, so the exporters of these products still face many obstacles. In fact, the product design of child garments rarely pays attention to safety standards such as details about waist belts, neck belts, etc.

The main reason is that Vietnamese garment enterprises do not have enough information and are not fully aware of the requirements and standards as well as the laws of the US and EU. In addition, in terms of meeting the standards, enterprises tend to adopt a countermeasure rather than prevention, while always having to follow the requirements of the partners. In addition, financial resources, technical facilities and human resources are still limited, and the ability of Vietnamese enterprises to overcome barriers is not adequate.

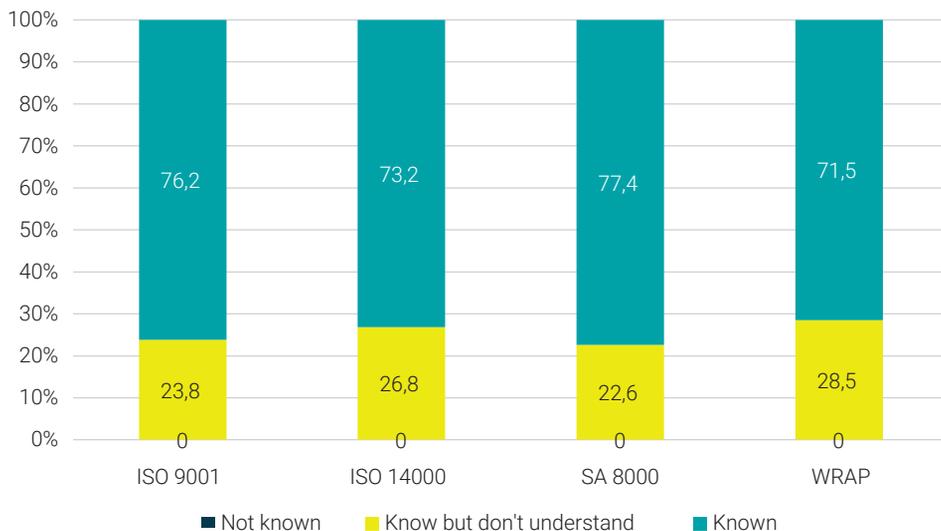


Figure 4. Firm's perception on the barrier associated with manufacturers

Source: Own work

The results of the survey on the perception of listed textile enterprises on manufacturer-related certifications showed that all of the respondents recognized the need for these certifications. The basic certifications for exporting to the US and EU markets such as ISO 9001, ISO 14000, SA 80000, WRAP are all considered important certifications; over 70% of the results show that businesses know these standards well, and about a quarter know of the standards but do not understand them. It can be seen that Vietnamese listed textile and garment enterprises now have very specific perceptions and realize the importance and role of quality assurance in the textile production process.

Degree of ownership of environmental certifications

With clear awareness of the role of international certifications in the production process, the listed textile and garment enterprises in the survey confirmed that more than 90% have achieved these international certifications; in which, the SA 8000 and ISO 9001 certifications have the highest ownership rate of 97% and 96% respectively, other certifications such as ISO 14000 and WRAP are over 90%. Only about less than 10% of the listed textile enterprises do not have these certificates and are committed to applying for them in the near future. Regarding social responsibility standards, listed textile enterprises have relatively good information and the level of interest in these standards has increased. This shows that the awareness of business leaders about fulfilling their certification commitments to the new generation of FTAs has largely improved. There have been textile enterprises that have received full international certificates including ISO 9001:2015, SA 8000, WRAP and ISO 14000 certificates but mainly large enterprises.

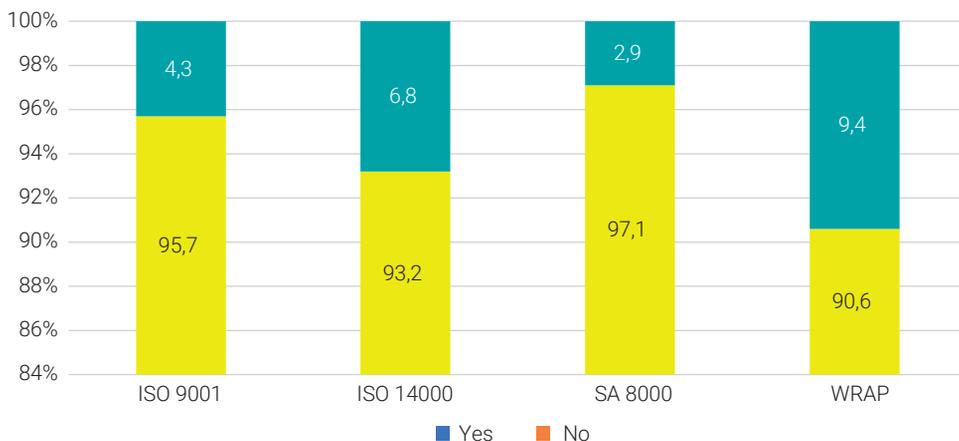


Figure 5. Degree of ownership of environmental certifications

Source: Own work

The ISO 9001 certificate seems to be the most basic certificate of enterprises when competing in the market, but the survey results show that there are still a few textile enterprises that do not currently have it. Other certificates, such as SA 80000 or WRAP, are also not achieved by all listed textile enterprises and most are also large-scale production enterprises in the industry. Regarding the ISO 14000 environmental certificate, quite a large number of businesses surveyed are aware of and understand this standard, but not all have owned the certificate. However, this also does not reflect the practices of corporate social responsibilities of Vietnamese textile and garment enterprises. In fact, there are businesses that, according to the standards, completely meet the requirements, but they think that these certificates are not necessary. This also comes from the fact that not all partners in the US or EU require the SA 8000 certificate; they can ask for a different set of rules or many partners even come to check the enterprise directly. However, if the listed textile enterprises are proactive in fulfilling conditions and standards for the new generation FTAs, with widely recognized certificates in the US and EU as well as other major markets, in the world, this is considered a passport to pave the way for textile and garment businesses to export their products.

3.3 Research result of the effects of new generation FTAs on sustainable textile product innovation

3.3.1 *Evaluation of the model*

The model including the measurement items (Table 1) is drawn with the widely used Smart-PLS version 4 package program and data analysis is also performed with this software. Firstly, the measurement model is evaluated, and it can be seen that the factor loadings of all variables are more than 0.7 and the p - values are less than 0.001. The AVE, Composite Reliability, and Cronbach's alpha values produced by the model for the construct reliability and convergent validity are examined and all values are found above 0.70 (Table 1). Since all these values are higher than the desired threshold values, no variable has been removed at this stage.

Table 1. Outer loadings matrix

	CEO perception	Environmental regulation	FTA expectation	SPIC
CEO1	0.851			
CEO2	0.902			
CEO3	0.898			
CEO4	0.860			
ER1		0.889		
ER2		0.890		
ER3		0.865		
ER4		0.793		
FTA1			0.899	
FTA2			0.884	
FTA3			0.804	
SPIC1				0.886
SPIC2				0.893
SPIC3				0.909
SPIC4				0.876

Source: Own work

It can be seen from Table 1 that all the value of outer loadings in SmartPLS is higher than 0.7 (the lowest value is ER4 with 0.793), so it meets the criteria for significance in EFA [21].

Table 2. Overview of reliability and validity constructs

Constructs	Cronbach's alpha	Composite reliability	AVE
CEO's perception (CEO)	0.901	0.931	0.771
Environment regulation (ER)	0.882	0.919	0.740
FTA exception	0.828	0.898	0.745
SPIC	0.913	0.939	0.794

Source: Own work

Moreover, in terms of discriminant validity, all latent constructs meet the requirements of reliability and validity, specifically: Cronbach's alpha is higher than 0.7, composite reliability is also over 0.8, and the square root value of AVE of environmental practices is higher than some of the correlation values between other constructs.

3.3.2 Evaluation of the structural equation model

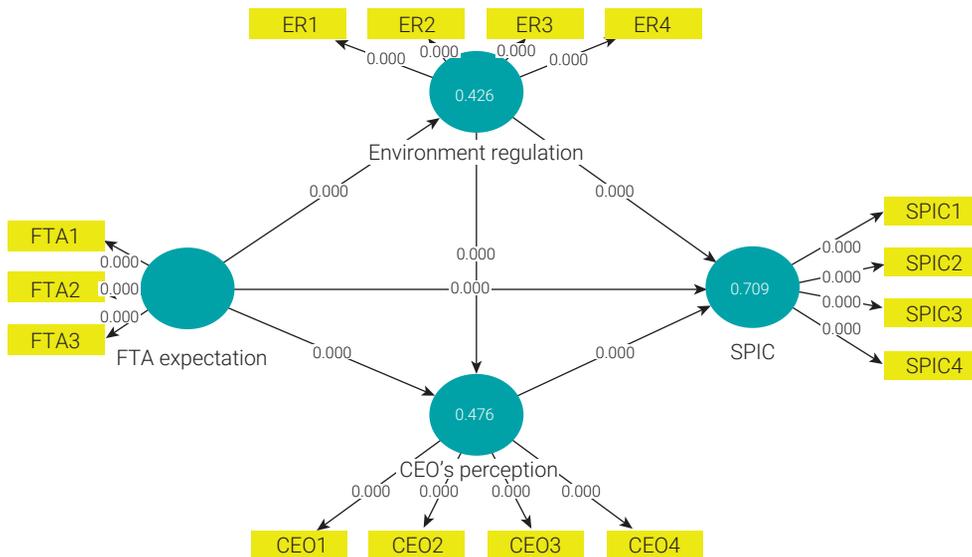


Figure 6. Estimation of final structural equation model
 Source: Own work

In the second phase, the structural model is analyzed by performing “Bootstrapping” on the measurement model, and p values used for testing the significance of path coefficients are given (Table 2) which indicates that all hypotheses are supported at the 5% significance level. In addition to direct effects, indirect effects are also examined. While FTA expectation has an indirect effect on SPIC over environmental regulation, a significant effect has been found on CEO perception (Table 3).

Table 3. Hypothesis test via direct effects

	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics (O/STDEV)	P values
CEO perception -> SPIC	0.381	0.381	0.027	14.230	0.000
Environment regulation -> CEO perception	0.482	0.482	0.034	14.326	0.000
Environment regulation -> SPIC	0.302	0.301	0.026	11.582	0.000
FTA expectation -> CEO perception	0.270	0.270	0.033	8.105	0.000
FTA expectation -> Environment regulation	0.652	0.653	0.024	27.702	0.000
FTA expectation -> SPIC	0.285	0.287	0.026	11.151	0.000

Source: Own work

Finally, the adjusted R^2 values as the coefficient of determination show how much the endogenous variables of Environmental regulation, CEO perception and SPIC Results can be explained by the model. It is observed that this value is 47.6% for CEO perception, while this value is 34% for Environmental regulation construct, and 70.9% for SPIC (Table 4).

Table 4. R^2 values of the constructs

	R-square	R-square adjusted
CEO perception	0.476	0.474
Environment regulation	0.426	0.425
SPIC	0.709	0.708

Source: Own work

Table 5. Assessment of role of mediating effect

	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics (O/STDEV)	P values
Environment regulation -> CEO perception -> SPIC	0.184	0.184	0.019	9.919	0.000
FTA expectation -> Environment regulation -> CEO's perception -> SPIC	0.120	0.120	0.013	9.189	0.000
FTA expectation -> Environment regulation -> SPIC	0.197	0.196	0.019	10.633	0.000
FTA expectation -> CEO perception -> SPIC	0.103	0.103	0.014	7.294	0.000
FTA expectation -> Environment regulation -> CEO perception	0.314	0.315	0.026	12.188	0.000

Source: Own work

According to result of Table 1 and Table 3, both direct and indirect effects are significant at the 5% level, so both Environment regulation and CEO perception play an important role as partial mediation in the relationship between FTA expectation and sustainable product innovation capability.

Hypothetical analysis of mediating variables: All 5 hypothesis results from Table 5 show that the indirect effect of CEO perception on environment regulation, with a very small P-value of 0.000, is statistically significant. It should be that CEO perception,

and environment regulation are partially mediating the relationship between FTA expectation and SPIC. On the other hand, environmental regulation has a directly, statistically significant effect on SPIC results (path coefficient weight is 0.184, P-value = 0.000). Therefore, CEO perception acts as the partial mediation; hence, all hypotheses are supported.

4. POLICY IMPLEMENTATION AND CONCLUSION

In this part of the study, the theoretical and practical implications will be recommended based on the findings.

Firstly, it is essential to proactively raise awareness to business leaders about regulations and standards on product quality and awareness of developing production and export of garments in an environmentally friendly direction. In the coming time, in order to improve the competitiveness of export garment products, the Boards of Directors of listed textile and garment enterprises need to actively seek information and cooperate closely with relevant authorities, such as the Ministry of Industry and Trade, TBT offices, etc., to update information on markets, thereby helping the management board of listed companies to implement solutions to meet the regulations of each market under the free trade agreements. At the same time, it is time for leaders of listed companies to have a deeper comprehension of the development of garment production and export in an environmentally friendly direction to improve their competitiveness and contribute to ensuring the export of sustainable fashion products.

Secondly, it is necessary to move from outsourcing production to direct production so that listed textile enterprises can be more proactive in meeting market requirements and improving competitiveness for exported fashion goods sustainably and in an environmentally friendly way. When participating in the new generation FTAs, with many incentives and tight constraints, especially the technical barriers of countries in the increasingly complex and sophisticated agreements, listed textile and garment manufacturers are forced to shift from Cut, Make, Trim methods (CMT) to modern methods such as purchasing raw materials, semi-finished products (OEM/FOB), and own-branded manufacturing methods (OBM). This results in listed companies being more proactive in meeting the increasing consumption demands of the importing markets. Switching to higher production methods, textile products with their own designs and brands will create greater added value for Vietnamese textile and garment exports, contributing to the development of textile exports under Vietnamese brands. The FOB and ODM methods require businesses to have the source of raw materials

available, which is a weak point in the entire industry in Vietnam. Therefore, in the transition from CMT to FOB and ODM, OBM, it is necessary to identify appropriate strategies in both the short term and the long term. In the short term, listed textile enterprises need to establish and maintain close relationships with input suppliers in the CPTPP, or linking with distributors in CPTPP countries.

Finally, it is vital to learn, research, and apply new and advanced production technologies to the operation process in order to reduce the use of machinery, equipment, facilities, and chemicals that are harmful to humans and the environment. Listed textile and garment enterprises, with the strength of mobilized capital on the stock market, need to boldly invest in the procurement of synchronous textile and garment equipment to meet technical standards in accordance with the provisions of the new-generation FTAs. With the constant innovation of textiles and garments, the product life cycle is short, so it is necessary to quickly innovate technology to meet the needs of textile and garment production in response to changing trends in the market. It is imperative to apply science and technology to programs of cleaner production, energy saving, production management, and quality of textile products; focus on inspection and examination of the quality of textile products, and overcome technical barriers.

In spite of including several findings, this study is not free of some limitations. Firstly, this paper only examines the role of new generation FTAs as a success factor, and there are other factors which have not been mentioned. Secondly, the sample of managers is quite small, so it causes survival bias and key information bias. The final limitation is that the research tries to collect as much information on product innovation in the dataset as possible; It is not feasible to cover all success factors as well as expected. Further studies can concentrate on analyzing other important success factors in the textile industry. In particular, further tests are highly suggested to prove the theory of Medeiros et al (2022) by using a mixed method approach.

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