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Innovation of Products and Processes in the Textile Garment Enterprises: Viewing From Vietnam's Policy

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Abstract: Innovation is one of the important factors that help businesses maintain and improve their competitive position,thereby promoting rapid and sustainable economic and social development, especially in an international competitive environment, which has been recognized by countries around the world, By qualitative and quantitative research methods, the article will clarify the current status of product and process innovation in textile and garment enterprises, thereby recommending solutions to improve policies to promote product and process innovation in Vietnam's textile and garment enterprises in line with the trend of digital transformation and the strong context of the Fourth Industrial Revolution.

Keywords: Product and process innovation; Vietnamese Textiles and Garments

I. Research overview

Innovation was first proposed by Schumpeter (1934), according to which innovation is the introduction of new products, processes, methods or systems by firms, including the creation of markets. new or new forms of industrial organization, this concept considers innovation to be associated with production and markets.According to Thompson (1967), innovation is the creation, acceptance and implementation of new ideas, processes and services, with an emphasis on exploiting new ideas.Innovation is considered a decisive factor for the existence and development of enterprises (Zahra and Covin, 1994), this concept has influenced the consciousness of enterprises when implementing innovation.Every innovative business creates new products and services that are developed to increase sales and profits (Paul N. Hague et al., 2016).The market research process can present new ideas and opportunities for product development, profit maximization for a product or service.Innovation plays an important role in the development and coordination of the market, which is one of the important contents of every business.

Researching on enterprise innovation is often placed in the context of a common system – the innovation system.The innovation system can be divided into three levels: the national innovation system, the regional innovation system, and the sectoral innovation System:(i) The National Innovation System (NIS) can be understood either in a broad sense, or in a narrow sense (Lundvall, 1992).In a broad sense, all the factors and interactions in the creation, dissemination and use of economically beneficial knowledge belong to the national innovation system.In a narrow sense, the national innovation system includes organizations and institutions related to research and discovery activities such as researching and development (R&D) organizations, R&D institutions and universities.(ii) The Sectoral Innovation System (SIS) is a set of intertwined public and private interests directed at the creation, use and dissemination of knowledge (Doloreux and Parto, 2005).The set of actors creating spillover effects and the business incentive system is formed from the relationships, norms, values and social interactions within the community to strengthen the capacity to change innovation and competitiveness of the industry.(iii) The regional innovation system (RIS) is composed of three elements, namely knowledge and technology, actors and networks, and institutions (Schrempf et al., 2013).Knowledge and technology define the scope of the innovation system. The actors and networks are individuals, businesses, state or quasi-state organizations that perform interactions through market and non-market relations. Regional institutions will create the policy environment to promote innovation in the region.

Innovation is the implementation of a new or significantly improved product (goods/services) or process, a new marketing method,or a new organizational measure in practice, in work organization or in external relations (Phan Thi Thuc Anh, 2017).Nham Phong Tuan (2016) believes that innovation is the implementation of a completely new or significantly improved product or service, building a new process, applying a new marketing method, and organizing a new business. business activities to bring greater added value to the organization or to be widely used in

society.According to OECD (2005, 2018), innovation includes innovation in products, processes, marketing and organizations.In which, product innovation changes the actual value of products in terms of quality, design, packaging, product features; innovating the potential value of products to bring to customers such as warranty service, after-sales service, credit support;Innovating the core value of the product is the biggest benefit that the product brings to customers.Process innovation has a strong impact on growth, helping businesses survive and develop sustainably, innovate in the direction of reducing production costs, and reducing product costs.

Innovation is strongly influenced by national policies.National policies have a strong influence on policies to promote innovative enterprises.Policies to promote innovation in emerging economies are often limited in terms of finance and markets.The institutional framework is not strong, innovation efficiency is not high, innovation scale is small, so the efficiency is not high.Meanwhile, when examining the interaction between firm size and participation in innovation activities of emerging economies, it shows that knowledge barriers and economic development have greatly influence innovation activities (Fernando de-Oliveira, Óscar Rodil Marzábal, 2018).Furthermore, businesses that aim to increase productivity and profitability, gain new markets and improve existing market share through innovative activities need to consider the impact of research activities. and develop to the structure, organizational culture, innovation management of the enterprise (Deniz Dilara Dereli, 2015).

Based on the types of innovation of the OECD (2005, 2018), in this article, product and process innovation in textile and garment enterprises is understood as follows:Firstly, product innovation in the textile and garment business is the activities of enterprises to create new products or products that are technically improved such as technical characteristics, ingredients in products,materials, control software,or other usable functional properties through a combination of existing technologies or the application of new knowledgeor use manufactured parts or materials with better performance.Product innovation in textile and garment enterprises is reflected through (OECD, 2005, 2018; Darroch, 2005; Eurostat, 2012; Phan Thi Thuc Anh, 2017):

- New products are created based on the combination of current technology with new uses;
- New products are created from the application of new knowledge;
- New products are created compared to competitors;
- New products are created that the enterprise has not produced before;
- Enterprises regularly create new products;
- Product is improved by using manufacturing parts with better performance;
- Products are improved by using production materials with better features;
- The product is improved by changing each part of the product.

The policy of promoting product innovation in textile and garment enterprises is closely related to the planning, competitive strategy, market positioning and development of textile and garment enterprises.Product innovation is especially important, considered the foundation of businesses.Policy to promote enterprises to innovate on the right product is the starting point of success for enterprises, only when enterprises form a product innovation policy will they have a direction to invest and research. product design (Isabell Neweg et al., 2019).In order to promote enterprises' product innovation, the State sets forth policies on research funding, technical support for scientific research, research cooperation with partners,policies and regulations for science, infrastructure and finance for product innovation (Sabet et al., 2017) to help businesses improve products or create new products.

Secondly, process innovation in textile and garment enterprises is the activities of enterprises to implement new production methods;changing production equipment to automatic, semi-automatic or internet-connected or improved production methods including equipment; equipment maintenance methods;cleaner production methods; application of software; production support activities;application of production support sites; hire qualified human resources; buy brands to reduce production costs and increase product quality.Process innovation in textile and garment enterprises is reflected through (OECD, 2005, 2018; Darroch, 2005; Eurostat, 2012; Phan Thi Thuc Anh et al., 2017):

- Changing of production equipment (semi-automatic, automatic, internet-connected equipment);
- Changing production methods;
- Innovating production support activities;
- Improvement of production equipment;
- Improved cleaner production methods;
- Improvement or application of software;
- Using the website to support in the supply of materials, transportation of goods, rental and borrowing of equipment;
- Enterprises hire qualified human resources; Buying a franchise in the form of a franchise/turnkey;
- Improving methods of maintenance and maintenance of production equipment.

The policy of promoting enterprises to process innovation in textile and garment enterprises has a close relationship with the production process of textile and garment enterprises.

Enterprises apply many automatic production systems controlled by programs, the achievements of information technology, computers, which have assisted in the management of the production system, supporting the decision-making of production and business.In addition, manufacturing enterprises are increasingly interested in cost control issues.Cost control is concerned more often by businesses in each function, in each management stage, focusing on saving time, resources and materials (Frederick W.Taylor, 1911; MoA & FW, 2019; Vinatex, 2020).In order to support enterprises to access the development of science and technology, the state should have policies to directly or indirectly serve the production and distribution of products or services of enterprises.

Thus, policies to promote innovation will affect innovation activities.Innovation of textile and garment enterprises often focuses on specific systems and equipment,such as software systems for production planning; automation design and technology; product development tools; automatic cutting and spreading equipment; equipment for pressing mext, erecting; sewing equipment; accessories for sewing equipment; finished product equipment; auxiliary equipment; spinning equipment; equipment on transmission of woven fabric production; textile product quality control system; complete dyeing equipment, color matching.The recognition of the totality in innovation activities of enterprises can only be seen through machines, equipment, software. There has not been attention to other aspects of innovation such as process improvement, distribution, marketing, restructuring.

II. Researching methods

2.1. Researching process

Step 1: Reviewed of domestic and foreign literature research related to innovation, factors affecting innovation, innovation policy in Vietnamese textile and garment enterprises(Secondary data).The author collected, categorized, evaluated, and selected data to use through domestic and foreign researches published in hard copy and soft copy related to innovation, policy books promoting innovation; simultaneously exploiting and using published data of state management agencies and textile and garment enterprises.

Step 2:Developed a research framework on policies to promote innovation and innovation.The construction was based on an overview of the research situation, combined with interviews and pilot surveys to calibrate the scale of policies to promote innovation in enterprises in accordance with the characteristics of Vietnam's textile and garment industry.

Step 3: Interviewed experts in the field of innovation working in research institutes, universities, state management agencies, and managers of textile and garment enterprises (Primary data):

- Interviewed with experts, this is a qualitative research method.The purpose was to understand the innovation activities of Vietnamese textile and garment enterprises, the influencing factors, the advantages and disadvantages of innovation activities, the influence of the state's policies on the innovation activities. type of innovation of Vietnamese textile and garment enterprises.

- Interviewed 2 experts from the Ministry of Industry and Trade, 2 experts from the Ministry of Science and Technology, 6 managers of textile and garment enterprises.Before the interview, the author contacted and sent questions in advance so that the experts would have the best preparation for the interview.This was an important content because the interviewers and surveyors are highly qualified. In addition to answering interview questions and giving professional opinions, experts and managers also give suggestions on innovation content, innovation policy to clarify research subjects.

- On the basis of a combination of research overview and expert interviews, the author built and adjusted the questionnaire to suit the research object being Vietnamese textile and garment enterprises.

Step 4:Contacted and conducted survey by questionnaire for textile and garment enterprises (Primary data).

- On the basis of the completed survey form, the author sent the survey form to the textile and garment enterprises by systematic random sampling method and convenient sample (convenience sample is the key);At the same time, the author also sent survey forms online and via email to selected businesses.Results: distributed 350 votes, collected 165 votes, but only 150 valid votes.

- In the process of sending questionnaires and collecting questionnaires, the author also encountered some difficulties such as those who filled out the questionnaires were not willing to participate, did not fully fill in the information in the questionnaires,or refused to respond to the ballot after submitting it because they could not arrange a suitable time (even though they have previously agreed),or sent someone else who doesn't really understand the purpose and content of the survey.

Step 5: Coding, processing survey data and analyzing the current state of innovation, policies to promote innovation of textile and garment enterprises.

- For primary data: After collecting questionnaires, the author cleaned and coded the data into SPSS software, and analyzed the reliability of the scales.

- For secondary data: The author has assessed, classified and selected the data used based on information from published scientific works,theses, publications of books, journals, proceedings of scientific conferences, statistics of management agencies.Especially the statistical data of the Vietnam National Textile and Garment Group, the General Statistics Office, the Ministry of Science and Technology,legal documents, policies to promote and support the development of enterprises in the textile and garment industry.After collecting data, the author processed the data (using SPSS software), and at the same time used descriptive statistical analysis methods, practical summaries and analysts, clarified the reality of innovation, policies to promote innovation of textile and garment enterprises.

Step 6: Evaluating policies to promote Vietnamese textile and garment enterprises to innovate products and processes.

Step 7: Proposing solutions to improve policies to promote Vietnamese textile and garment enterprises to innovate products and processes.

2.2. Scales of Variable Measurement

Firstly, the scale of product and process innovation of textile and garment enterprises

Types of Innovation	Factors	Origin and basis of the scales
Product innovation	New products are created based on the combination of current technology with new uses	OECD (2005, 2018), Darroch (2005), Eurostat (2012). Phan Thị Thục Anh (2017)
	New products are created from the application of new knowledge	
	New products are created compared to competitors	
	New products are created that the business has not produced before	
	Businesses regularly create new products	
	Productsare improved by using better performance manufacturing parts	
	Products are improved by using production materials with better features	
	Product are improved by changing each part of the product	
	In general, businesses often improve new products	
Process innovation	Changing production equipment (semi-automatic, automatic equipment, equipment with internet connection)	OECD (2005, 2018), Darroch (2005), Eurostat (2012). Phan Thị Thục Anh (2017)
	Changing production methods[1]	
	Innovating production support activities	
	Improving production equipment	
	Improved cleaner production methods	
	Improvement or application of software[2]	
	Using the website to assist in the supply of materials, transportation of goods, rental of equipment	
	Enterprises hire qualified human resources	
	Buying franchises/turnkeys	
	Improving methods of maintenance and maintenance of production equipment	
	In general, enterprises often invest in process innovation activities	

On the basis of reliability analysis performed for each measure, the results show that, basically, the questions measuring each variable/innovation factor have consistency and an acceptable association (with both Cronbach's Alpha's coefficients greater than 0.8).

After analyzing the correlation between factors and variables for the 3rd time (the first and second times have removed 8 observed variables), the product innovation has Cronbach's Alpha coefficient of 0.894; Process innovation has Cronbach's Alpha's coefficient of 0.905.

Second, the policy scale promotes innovation in textile and garment enterprises.

[1]For example, converting from CMT (Cut, Make, Trim) to OEM/FOB (Original Equipment Manufacturing/Free On Board), ODM (Original Design Manufacturing) to product manufacturing with own brand (OBM - Original Brand Manufacturing).
[2]Production management software sPMS garment industry, accounting software for cutting table Garment SD 7.0, ERP resource planning software, Facewords management software.

On the basis of types of innovation (OECD, 2005, 2018), corresponding to them are policies to promote innovative enterprises.Along with an overview of domestic and foreign research on policies to promote innovation, combined with interviews with experts in the field of textile and garment, the thesis proposes four types of corresponding policies and uses the Likert scale (1 = Strongly disagree to 5 = Strongly agree) to measure, including:

- Policy to promote product innovation: Supporting the application of knowledge to improve products; promoting product innovation through the use of better materials; encouraging product diversification in line with trade agreements; promoting the development of raw materials for product localization; promoting product design; supporting to improve the quality of human resources for product innovation; encouraging product innovation through tax instruments; encouraging product innovation through credit tools.

- Policies to promote process innovation: supporting to change production methods; encouraging management along the value chain, from raw material supply to product distribution; supporting the transformation of production methods from manual technology to integrated technology; driving manufacturing process improvement through productivity and quality tools; promoting innovation of production processes towards environmentally friendly; supporting to receive, adapt and master the production technology process; supporting the application of inventions and inventions to change the production process; supporting access to information to serve the innovation of production processes; promoting inspection and quality control activities for the renewal of production processes; promoting innovation in manufacturing processes to overcome technical barriers to trade; supporting to improve the quality of human resources for the innovation of production processes; encouraging process innovation through tax instruments; encouraging process innovation through credit tools.

Analyzing the reliability of the scale on policies to promote innovation of textile and garment enterprises as follows:The policy to promote enterprise innovation in products has Cronbach's Alpha of 0.911; The policy to promote enterprise innovation in process has Cronbach's Alpha of 0.949.

III. Research results

3.1. Overview of Vietnam's textile and garment industry

Vietnam's textile and garment industry has experienced good growth in recent years, in which exports account for a large proportion.Export turnover in the period 2015 - 2019 of the textile and garment industry has had positive changes (Table 4.1):

Table 2: Export turnover of textiles and garments in the period 2015 - 2019

Unit: million USD

Years	2015	2016	2017	2018	2019
Turnover	27500	28300	31000	36150	39600

Source:Summary from the Ministry of Industry and Trade (2020)

Although Vietnam's export growth in 2019 cannot be maintained as in 2018, it is estimated at 39.6 billion USD, up 9.1%, of which 3% is from existing enterprises, 6% is from newly invested enterprises in 2017, 2018, going into production and business in 2019 (Vietnam Textile and Garment Group, 2020) but Vietnam's textile and garment export growth still maintains its leading position, which is considered a bright spot among textile and garment exporting countries affected by trade conflicts (Table 2). However, 2020 is a difficult year for Vietnam's textile and garment industry when the market has many fluctuations due to the impact of Covid-19, the total export turnover of products of the textile and garment industry reached about 35 billion USD, down 9.8% compared to 2019.

Table 2: Export turnover of countries in 2019

Unit: million USD

Countries	**2018**	**2019**	**Difference 2019 - 2018 (%)**	**Compound annual growth rateCAGR (%)**
China	266.420	260.292	- 2,3	-1,97%
Bangladesh	40.957	41.944	2,41	6,34%
Vietnam	36.375	39.696	9,13	0,38%
India	37.119	37.639	1,4	-0,50%
Pakistan	13.569	12.945	- 4,6	-1,23%

Source: Vietnam Textile and Fashion Magazine (2020)

Contributing to the trade balance of textile and garment enterprises accounts for 14.5% of national export turnover (Vietnam Customs, 2017),ranked second in terms of export turnover, of which mainly garments (80%), fabrics (6%) and fibers and yarns (11%).In which, the proportion of exports coming from the foreign direct investment (FDI)

sector accounted for 59.9% of the total value.The main export markets in 2018 include the US and EU leading the way with export turnover in the year increasing by 13.7% and 10.5%, respectively, and Japan and South Korea with export turnover increased 24.8% and 32.6% respectively.Yarn industry with nearly 70% of output exported to foreign countries.This data shows that the difficulty of Vietnamese textile and garment enterprises is that the input materials for the apparel manufacturing industry do not correspond to the production capacity of the industry.

Up to now, Vietnam has a total of 8,000 textile and garment enterprises nationwide, in which the number of garment processing enterprises accounts for 85%;the number of enterprises producing fabric and dyeing accounts for 13%; production and processing of fibers and yarns accounts for 2% (Vietnam Textile and Garment Association, 2018).Vietnamese textile and garment enterprises participate in the global garment value chain mainly in the processing stage (CMT), accounting for 65% of the market share,method of purchasing raw materials, manufacturing, and semi-finished products (FOB: Free On Board) accounted for 25%,about 9% export by concept design method, manufacturing, providing related products and services (ODM: Original Design Manufacturer),production method, manufacturers design themselves and sign contracts to supply goods at home and abroad for their own brands, accounting for 1% (OBM: Own Brand Manufacturing).The added value of textile products is still low, only about 30% compared to the increase in export turnover, the profit margin is about 10% and imported raw materials account for 70-80%.

Textile and garment enterprises depend on the supply of imported materials, textile materials and accessories account for 38% of total import and export value, import of raw fabrics accounted for the highest proportion, accounting for nearly 60% of import value (General Department of Customs, 2017).The localization of a closed supply chain of yarn - weaving, dyeing - sewing is very important for textile and garment enterprises to benefit from FTAs.Therefore, at present, there are many FDI projects participating in the construction of large-scale yarn factories.

3.2 Product innovation and policies to promote product innovation in Vietnamese textile and garment enterprises

Firstly, product innovation of textile and garment enterprisesis the activities of enterprises to create new products, or technically improved products such as specifications, product components, materials, control software,or other functional properties of use through a combination of existing technologies or the application of new knowledge or the use of better performing parts or production materials.

Table 3: Product innovation in textile and garment enterprises

Product innovation activities	Mean	Standard deviation
Products are improved by using production materials with better features	3,06	0,853
Product is improved by using better performance manufacturing parts	3,05	0,881
The product is improved by changing each part of the product	3,02	0,839
New products are created based on the combination of currenttechnology with new uses	2,88	1,068
New products are created from the application of new knowledge	2,85	1,091
New products are created that the business has not produced before	2,83	1,039
New products are created compared to competitors	2,82	1, 069
Businesses often create new products	2,76	1,015

Source: Research results ofpostgraduate

Product innovation of textile and garment enterprises is reflected through the following indicators:new products are created based on a combination of current technology and new uses;new products are created from the application of new knowledge; new products are created compared to competitors;newly created products that the enterprise has not produced before; businesses regularly create new products;improved products due to the use of manufactured parts with better performance;improved products due to the use of production materials with better performance;the product is improved by changing each part of the product.The results of product innovation in surveyed textile and garment enterprises (Table 3) show that enterprises are most interested in improved products because:using production materials with better features (with mean of 3.06, 33.4% of enterprises agree and strongly agree);use better performing manufactured parts (mean of 3.05, % (agree and strongly agree): 30.7);partial change of the product (mean of 3.02, % (agree and strongly agree): 32.6).Next is the newly created product: based on a combination of current technology with (mean of 2.85, % (agree and strongly agree): 35.3);the enterprise has not produced before (mean of 2.83, % (agree and strongly agree): 34.0);compared with competitors (mean of 2.82, % (agree and strongly agree): 32.0).Enterprises are least interested in regularly creating new products (mean of 2.76% (agree and strongly agree): 26.7).

Secondly, the policy of promoting enterprises to innovate products is understood as the way in which the State directly or indirectly affects enterprises through state management agencies, legal documents system to supporting businesses to apply scientific and technological knowledge to improve, diversify and localize products to meet customer requirements, be accepted by the market, in accordance with trade agreements,promote the development of raw

materials for product localization,promote product design, support to improve the quality of human resources for product innovation, and encourage product innovation through tax and credit tools.

Table 4: Policies to promote product innovation in textile and garment enterprises

Policy to promote product innovation	Mean	Standard deviation
Supporting to improve the quality of human resources for product innovation	3,38	1,014
Encouraging product diversification in line with trade agreements	3,33	1,156
Encouraging product innovation through credit	3,29	0,756
Promoting product design	3,27	1,028
Driving product innovation through the use of better materials	3,06	1,154
Supporting knowledge application for product improvement	2,99	1,212
Promoting the development of raw materials for product localization	2,97	1,045
Encouraging product innovation through taxation	2,95	0,758

Source: Research results ofpostgraduate

The survey results on policies to promote textile and garment enterprises to innovate products show that (Table 4):

- Supporting to improve the quality of human resources for technological innovation in general and product innovation in particular, which is reflected in the goal of human resource development in Vietnam's textile and garment industry;financial support for training human resources in Vietnam's textile and garment industry;supporting enterprises in technological innovation through the National Technology Innovation Fund;attracting scientists from abroad;promoting high-quality human resources through the formation of training institutions for the textile and garment industry (45.3% of enterprises agree and strongly agree; mean is 3.38).

- Encourage product diversification in line with trade agreements shown in Circular 07/2019/TT-BCT regulating the export of textiles and garments to Mexico under the Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP);Circular 25/2019/TT-BCT amending and supplementing a number of articles of Circular No. 22/2016/TT-BCT implementing the Rules of Origin of goods in the ASEAN Trade in Goods Agreement;Circular 13/2019/TT-BCT amending and supplementing a number of articles of Circular No. 20/2014/TT-BCT providing for the implementation of rules of origin in the ASEAN - Korea Free Trade Agreement;Circular 03/2019/TT-BCT stipulating the Rules of Origin of goods in the Comprehensive and Progressive Agreement for Trans-Pacific Partnership... (43.3% of enterprises strongly agree; mean of 3.33).With policies towards free trade agreements, it has helped textile and garment enterprises to innovate upstream to build fabric factories, yarn factories to connect the whole system and control. this system, bringing Vietnam's supply chain to the world (Vinatex, 2019).For example, Vinatex Phu Cuong (Dong Nai) yarn factory, with an output of 10,000 tons of yarn/year, is accepted into the US global supply chain, providing yarn for weaving fabrics for underwear and knitwear.

- Encouraging product innovation through preferential credits at funds and business support programs.Businesses can get financial support up to 30%, even up to 50% of the total investmentif enterprises carry out projects to apply scientific results to create new products or to increase productivity, product quality and product competitiveness.However, many textile and garment enterprises still have difficulty in accessing financial support (38% of enterprises agree and strongly agree; mean of 3.29).

- Promotion of product innovation through tax instruments is demonstrated through legal provisions such asCircular No. 38/2013/TT amending preferential import tax rates for a number of products in heading 39.03, 54.02, 59.02, 72.17 in the preferential import and export tariff for some synthetic fibers;preferential loans, loan interest support, loan guarantees, support for enterprise capital for research, transfer, innovation and improvement of technology;allowing maximum deduction of 10% of taxable income for setting up a fund for science and technology development in an enterprise specified in Article 17 of the Law on Corporate Income Tax (18.7% of enterprises agree and strongly agree; mean of 2.99).This shows that it is difficult for textile and garment enterprises to access tax support for product innovation.

- In addition, the recognition and use of a number of preferential policies for product innovation of textile and garment enterprises is still limitedsuch as supporting knowledge application to improve products (34.7% of enterprises agree and strongly agree; mean of 2.99);promoting the development of raw materials for product localization (28.7% of enterprises agree and strongly agree; average score of 2.97).

Thus, in general, the policy of promoting textile and garment enterprises to innovate their products has impacted the development of textile and garment enterprises such as supporting the improvement of quality human resources,diversifying products in line with trade agreements, promoting product design and innovation.In addition,

some incentives and incentives have not yet received the attention of textile and garment enterprises such as support for knowledge application,development of raw materials for product localization and tax incentives for product innovation.

3.3 Process innovation and policies to promote process innovation in Vietnamese textile and garment enterprises

Firstly, process innovation in Vietnamese textile and garment enterprises

Process innovation is an enterprise's activities aimed at implementing new production methods;changing production equipment to automatic, semi-automatic or internet-connected or improved production methods including equipment;equipment maintenance methods; cleaner production methods;application of software; production support activities; application of production support sites; hire qualified human resources; buy brands to reduce production costs and increase product quality.The process of innovation in production processes in textile and garment enterprises has had a great impact on the 4th industrial revolution.A large part of workers will be replaced by automation and modern machines and equipment (Klaus Schwab, 2016; Carl Frey and Michael Osborn, 2017) predicting about 47% of total jobs in the US have at risk of being replaced by robots and automation in the next two decades).

To meet the requirements of importing countries, as well as retailers and brands around the world,the textile and garment industry has researched and built a system of quality control processes in order to increase the localization rate for textile products (Nguyen Van Thong, 2017).In which, the technical management and quality control systems in textile and garment factories have been evaluated;quality management tools, quality control is recorded;quality control systems in yarn mills, textile mills, dyeing mills, garment factories, and a system of garment shipment inspection procedures is established; common types of errors on yarn, textile, dyed fabric and garment products are synthesized, briefly analyzed for the causes of errors, and how to fix them.Processes that can be applied in actual production, develop and organize appropriate quality control and inspection procedures, in order to improve product quality, reduce costs and risks due to defects, increase enterprise competitiveness.

Process innovation of textile and garment enterprises is reflected through the following indicators:improving production equipment;improved cleaner production methods;changing production methods;changing production equipment (semi-automatic, automatic, internet-connected equipment);improving methods of maintenance and maintenance of production equipment;innovating production support activities; improvement or application of the software;using the website to assist in the supply of materials, transportation of goods, rental and borrowing of equipment; enterprises hire qualified human resources;buying brands in the form of franchising/turnkey. The survey results of 150 textile and garment enterprises show that the status of process innovation is as follows (Table 5).

Table 5: Process innovation in textile and garment enterprises

Process innovation activities	Mean	Standard deviation
Changing production equipment (semi-automatic, automatic equipment, equipment with internet connection)	3,55	0,808
Changing production methods	3,53	1,097
Innovating production support activities	3,48	0,910
Improving production equipment	3,40	0,948
Improved cleaner production methods	3,35	0,976
Improvement or application of software	3,13	1,066
Using the website to assist in the supply of materials, transportation of goods, rental of equipment	3,13	0,981
Enterprises hire qualified human resources	3,12	0,969
Buying franchises/turnkeys	3,02	0,937
Improving methods of maintenance and maintenance of production equipment	2,97	0,874
In general, enterprises often invest in process innovation activities	3,27	1,029

Source: Research results ofpostgraduate

The results of process innovation in surveyed textile and garment enterprises (Table 5) show thatenterprises most interested in improvement: production equipment (mean of 3.55, % (agree and strongly agree): 34.0); cleaner production methods (mean of 3.53, % (agree and strongly agree): 45.4); methods of maintaining and maintaining production equipment (mean of 3.35, % (agree and strongly agree): 45.4); software applications (mean of 3.13, % (agree and strongly agree): 48.0).Next is the change: production method (mean of 3.48, % (agree and strongly agree): 42.7); production equipment (semi-automatic, automatic, internet-connected equipment) (mean of 3.40, % (agree and strongly agree): 40.0); innovation in supporting production activities (mean of 3.13, % (agree and strongly agree): 40.6); using websites to assist in the supply of materials, transportation of goods, rental and borrowing of equipment (mean of 3.12,

% (agree and strongly agree): 34.7); enterprises hire qualified human resources (mean of3.02, % (agree and strongly agree): 32.6).Enterprises least interested in buying a brand in the form of franchising/turnkey (mean of 2.97, % (agree and strongly agree): 34.7).

Survey results of 150 enterprises about regularly investing in process innovation activities in the past three years, average score of 3.27.This is equivalent to a textile enterprise that has carried out process innovation activities at a relatively decent level.The percentage of enterprises that agree and strongly agree with process innovation is 42.0%.The results of this study are not much different from the results of the business process innovation survey in general, which is 39.88% (Ministry of Science and Technology, 2018).Besides the results achieved in process innovation, Vietnamese textile and garment enterprises also face certain difficulties.Enterprises with science and technology development funds are classified according to their size and proportion of fund deduction from pre-tax profits,only 7% of small businesses set aside a science and technology development fund at 7% of pre-tax profit.In medium-sized enterprises, 38% of enterprises set aside funds for science and technology development at <3% of pre-tax profit.At large enterprises, 42% of enterprises set aside funds at >=10% of pre-tax profit.Textile and garment enterprises, when implementing process innovation, are also affected by a number of factors such as capital sources and necessary capital mobilization for innovation activities (54.7% of enterprises agree and 17, 3% of enterprises strongly agree),the level of competition in the industry (52.7% of enterprises agree and 20% strongly agree),existing competitors in the industry (48% agree and 14% strongly agree),methods of cooperation and association in the industry (52% of enterprises agree and 19.3% of enterprises strongly agree),copyright of innovative products (44.7% of enterprises agree and 10% strongly agree).

- In addition, awareness of a number of incentives and incentives of textile and garment enterprises on process innovation is not high.Specifically, on supporting textile and garment enterprises to receive, adapt and master production technology processes (31.3% of enterprises agree and strongly agree; mean of 2.93);encouraging process innovation through tax tools (32% of enterprises agree and strongly agree; mean of 2.81);encourage supply chain management, encourage management along the value chain, from raw material supply to product distribution (35.3% of enterprises agree and strongly agree; mean of 2.97).

Thus, in general, textile and garment enterprises have been aware and highly appreciative of a number of incentives, incentives, and support for process innovation such as credit support, assessment, quality control;supporting to improve the quality of human resources;overcome technical barriers to trade,…In addition, there are a number of incentives and incentives that have not been paid much attention and appreciated by textile and garment enterprises such as value chain management,supporting the application of innovations and inventions, supporting the reception, adapting and mastering the process.

Secondly, the policy to promote enterprises to innovate processes is understood as the way the State affects enterprises based onthe development of science and technology through the formsuch as supporting production method innovation, encouraging value chain management, promoting production process improvement, supporting adoption, adaptation,master the production technology process to bring added value to the business.

The policy of promoting textile and garment enterprises to innovate processes is reflected through the following indicators:assist in changing production methods, converting production methods from manual technology to integrated technology, receiving, adapting, mastering production technology processes, applying innovations and inventionsto change the production process,access to information for innovation in production processes,improve the quality of human resources for the renewal of production processes; encouraging management along the value chain, from raw material supply to product distribution, process innovation through tax and credit instruments;promoting production process improvement through productivity and quality tools, innovating production processes towards environmental friendliness;inspection and quality control activities for the renewal of the production process and the renewal of the production process to overcome technical barriers to trade.

Table 6: Policies to promote process innovation in textile and garment enterprises

Policies to promote process innovation	Mean	Standard deviation
Encouraging process innovation through credit tools	3,45	0,856
Promoting inspection and quality control activities for innovation in production processes	3,44	0,93
Supporting to improve the quality of human resources for production process innovation	3,38	1,157
Driving manufacturing process innovation to overcome technical barriers to trade	3,27	1,151
Driving manufacturing process improvement through productivity, quality tools	3,25	1,016
Supporting access to information to serve innovation of production processes	3,18	0,898

Supporting to change production methods	3,17	1,132
Supporting the transformation of production methods from manual technology to integrated technology	3,11	1,046
Promoting innovation in production processes towards environmentally friendly	3,03	1,023
Encouraging management along the value chain, from raw material supply to product distribution	2,97	1,077
Supporting the application of inventions and inventions to change the production process	2,96	1,092
Supporting to receive, adapt and master the production technology process	2,93	1,103
Incentivize tax clearance process innovation	2,81	1,145

Source: Research results ofpostgraduate

The results of a survey of 150 textile and garment enterprises on policies to promote business innovation are as follows (Table 6):

- Support to change production methods. Most of the policies promoting process innovation are of interest to textile and garment enterprises.In fact, in the past period, international organizations have supported textile and garment enterprises to innovate their processes through training,providing technical and financial support to textile and garment enterprises towards the innovation of cleaner production technology such as UNIDO, JICA, USAID, WB, ADB, etc.In addition, Program 712 (now Program 1322) has supported enterprises in renovating their management organization with such contents as developing Vietnamese standards and national technical regulations; building a system of indicators and methods of measuring the productivity of the economy; disseminating, training and raising awareness of knowledge about quality productivity; consulting, guiding textile and garment enterprises to apply support to change production methods (46.7% of enterprises agree and strongly agree; mean of 3.17).

- Promoting inspection and quality control activities;improving production processes through productivity and quality tools;supporting access to information to serve the innovation of production processes.Approving a number of guidelines from the Ministry of Industry and Trade (Circular 20/2018/TT-BCT, amending the list of textile and garment products governed by the Regulation issued together with the National Technical Regulation QCVN:01/ 2017/BCT, Circular 07/2018/TT-BCT promulgating the National Technical Regulation on the limit of formaldehyde and aromatic amines converted from azo dyes in textile products),textile and garment enterprises have recognized and used these supports and incentives.Specifically, on promoting inspection and quality control activities for innovation in production processes (47.3% of enterprises agree and strongly agree; mean of 3.44);promoting production process improvement through productivity and quality tools (41.3% of enterprises agree and strongly agree; mean of 3.25);supporting access to information for innovation in production processes (36% of enterprises agree and strongly agree; mean of 3.18).

- Overcoming technical barriers to trade;innovating the production process towards being environmentally friendly; supporting the transformation of production methods;supporting to improve the quality of human resources; encouraging process innovation through credit instruments.Approving policy documents (Circular 37/2019/TT-BCT detailing a number of contents on trade remedies;Decision No. 3218/QD-BCT on development planning of Vietnam's textile and garment industry up to 2020;The Vietnam Resource Efficiency Improvement Program in collaboration with the Ministry of Industry and Trade and the International Finance Corporation - IFC, Clean Technology Fund, Korea Green Growth Trust) shows that promoting innovation in production processes solutions to overcome technical and trade barriers are of interest to enterprises (46.7% of enterprises agree and strongly agree; mean of 3.27); promoting innovation of production processes towards environmentally friendly (34% of enterprises agree and strongly agree; mean of3.03); supporting the conversion of production methods from manual technology to integrated technology (46.7 % of enterprises agree and strongly agree; mean of3.17); supporting to improve the quality of human resources for innovation in production processes (48% of enterprises agree and strongly agree; mean of3.38); encouraging process innovation through credit tools (43.4% of enterprises agree and strongly agree; mean of 3.45).

IV. Conclusions and recommendations

Firstly, the policy of promoting product innovation in textile and garment enterprises has contributed to improving the quality of human resources for product innovation, supporting businesses to diversify products, focusing on developing and expanding credit sources to support businesses.Besides, Vietnam participates in free trade agreements, so the products of textile and garment enterprises are gradually diversifying to conform to trade agreements.In addition, the scientific and technological development funds of textile and garment enterprises have also contributed to promoting product innovation and product design to meet the increasing requirements of the market.However, the policy to promote product innovation in textile and garment enterprises has not yielded the desired results, most of the industry's raw materials are mainly imported, innovation through the use of better materials

that are difficult to do, so developing raw materials to localize products, encouraging product innovation through tax and credit tools and improving the quality of human resources is necessary.Especially, the calculation, design and standardization of products at textile and dyeing factories have not been promoted in the direction of bringing added value to customers.Laboratories are not yet fully equipped with barcode systems, measuring devices, automatic color mixing equipment, storage systems, quantity of samples, and products created are not diverse and abundant.

Secondly, the policy of promoting process innovation in textile and garment enterprises has contributed to the realization of the goal of developing the textile industry into one of the key and spearhead industries for export;supporting the transfer of modern equipment, high technology and advanced techniques;at the same time, helping businesses have conditions to purchase new equipment with advanced technology through credit support.The support of textile and garment enterprises to meet the mandatory conditions for goods when exporting has promoted inspection and quality control activities in service of renewing production processes, overcoming technical barriers to trade. In trade, the quality management system according to international standards has been gradually improved.Productivity and quality programs that promote textile and garment enterprises to improve production processes and increase competitiveness have created a leap in the quality of textile products.However, policies to promote process innovation in textile and garment enterprises have not really contributed to changing production methods, supporting enterprises to receive, adapt to master technology and apply initiatives,inventions and useful solutions to innovate production processes has not yet brought about high efficiency.

In fact, textile and garment enterprises that are difficult to master the production technology process mainly buy technology for application, with little improvement or research.Due to the low number of textile and garment enterprises producing under ODM and OBM methods, accounting for 10%, it is difficult to encourage management along the value chain, from raw material supply to product distribution.Thus, in the current context, the second industrial revolutionthe fourth has had an impact on the entire textile industry supply chain, the trend of shifting production to developed countries, the low-cost competitive advantage is increasingly being eliminated, and the competition in major export markets is increasingly fierce.Therefore, textile and garment enterprises need to improve their competitiveness based on the state's support through innovation.In particular, policies to promote innovation of textile and garment enterprises should continue to be perfected in line with the development plan of Vietnam's textile industry to 2020, with a vision to 2030 (Decision No. 3218/QD-BCT of the Ministry of Industry and Trade)as well as in line with the development strategy of the textile industry to 2030 in the context of the strong fourth industrial revolution.Therefore, some solutions to improve policies to promote innovation in Vietnamese textile and garment enterprises are proposed as follows:

Firstly, perfecting policies to promote product innovation in Vietnamese textile and garment enterprises:

- Support textile and garment enterprises to apply new knowledge to improve and innovate products with competitive advantages.To do this well, it is necessary to improve the quality of human resources through strengthening the specialized training system in textiles and garment, training high-quality human resources as atHanoi Industry Textile Garment University and a number of colleges in the industry, focusing on human resources in yarn, textile, dyeing, garment technology and mechatronics in textile, fashion design; The Vietnam Textile and Apparel Association should act as a focal point to coordinate and link with domestic and foreign enterprises and training institutions to deploy human resource training programs for the industry.

- Encouraging the development of raw materials to limit dependence on foreign countries, especially from China,along with that is promoting and encouraging investment in the production of raw materials, fabrics, finishing printing and dyeing in order to gradually improve the localization rate and the ability to take initiative in raw materials for enterprises; developing high-value products, smart textile products serving other industries such as healthcare, transportation, and agriculture; supporting the formation of fashion design centers to guide trends for designers to create products that meet customer requirementsas well as providing services of providing designs/collections for businesses promoting FOB, ODM goods.

- Speeding up the implementation of tax and credit incentives to support textile and garment enterprises in product innovation;at the same time consider not collecting value-added tax when using domestic materials to produce export goods, effectively implementing credit incentives, simplifying procedures, processes; creating conditions for enterprises to access and use preferential capital from the state.

- In addition, it is necessary to support research and design activities, check product quality, overcome technical barriers to trade of importing countries;supporting upgrading and forming centers of inspection and quality control of textile products and textile supporting industry products; paying attention to national technical standards and regulations for Vietnam's textile and garment products to harmonize with international and regional standards such asbarcodes, product stamps, QR codes, RFID tags for number management, product traceability to combat counterfeits, smuggled goods, and poor quality goods.

Secondly, perfecting policies to promote process innovation in Vietnamese textile and garment enterprises:

- Supporting enterprises to apply quality management systems, human resource management systems, environmental management according to international standards, meeting the requirements of global production chains in corporate governance, management production value.Therefore, every year it is necessary to evaluate the ability and need to apply standards and management systems in production at textile and garment enterprises nationwide, especially small and medium enterprises; supporting enterprises in planning, translating and compiling documents on corporate governance and production management.

- Encourage enterprises to shift production methods from CMT processing to FOB and ODM, gradually form and develop textile supply chains, from raw material supply to product distribution;supportingtextile and garment enterprises in research, development, application, transfer and innovation of technological processes in production; encouraging textile and garment enterprises to use modern technological processes, capable of synchronizing with other firms' equipment, integrating control software, and saving energy;supporting textile and garment enterprises to invest in solar power in factories that are naturally qualified, encouraging textile and garment enterprises to use more than 10% of electricity used from renewable energy.

- Supporting enterprises to develop and implement a roadmap to innovate technological processes in the textile industry towards environmentally friendly production,cleaner production, rational, economical and highly efficient use of chemicals, auxiliary substances, dyes, steam, electricity and water. The government should have policies to support businesses investing in the direction of clean production and environmental protection, such as refunding paid corporate income tax on profits,then used for new investment towards green production, consider not collecting value added tax of investment expenses, reduce corporate income tax for 5-10 years.

- In addition, supporting textile and garment enterprises to access a number of modern production technology processes suitable to the needs of enterprises,at the same time, it is necessary to support enterprises to improve their technology operation capacity, which is reflected in the ability to manage production, maintenance, incident prevention,troubleshooting and stable operation of the enterprise's technological processes;step by step improve the ability to receive technology, improve and copy imported technology, and create technology in order to contribute to the creation of many quality and exportable products in the market.

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