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Circular Economy Development towards Sustainable Development in Vietnamese Textile and Garment

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Abstract

In the context of increasingly depleted resources, more and more waste from production is released into the environment, requiring businesses to constantly focus on environmental protection in production. That's why developing a circular economy is becoming an inevitable trend. Along with green economic development, circular economy is a complete solution to continue the sustainable development orientation of the state. Textile and garment is the leading industry in the country in terms of abundant labor resources and is an industry that generates a large

amount of waste. This article studies the current situation of circular economy in 46 Vietnamese textile and garment enterprises. Research results show that textile and garment enterprises are implementing environmental protection solutions towards sustainable development. However, circular economic development is still a new model for Vietnamese textile and garment enterprises. From the research results, the author proposes solutions to enhance circular economic development towards sustainable development in Vietnamese textile and garment enterprises.

Keywords: Circular Economy, Sustainable Development, Vietnamese Textile and Garment Enterprises

1. Introduction

Vietnam, after a long period of development based on resources and cheap labor, has achieved much in terms of socio-economic development. However, our country is facing many serious challenges of resource depletion, environmental pollution and climate change. Therefore, Vietnam needs to show responsibility in solving global challenges caused by environmental pollution, climate change, and improving the competitiveness of the economy. Building a society that consciously takes advantage of used raw materials instead of spending processing costs, minimizing the exploitation of natural resources, maximizing the value of resources, minimizing waste and gas emissions into the environment, protecting people's health. It is necessary to orient the economy towards advanced trends to reduce the risk of product overproduction and resource scarcity crises, create new job and investment opportunities, reduce production costs, and increase the supply chain. Based on Vietnam's actual situation and experience from advanced countries, circular economy is an effective solution for sustainable socio-economic development of the country, in accordance with the conditions of natural resources. Resources are limited and are gradually running out, the environment is being degraded.

Vietnam's textile and apparel sector has seen substantial growth in recent years. The textile industry remains a vital sector in Vietnam's industrial structure under the 2020- 2030 industrial development plan. However, environmental solutions are required for the long-term development of the industry in general, and textile firms in particular. One option is to promote circular economic growth. As a result, the study investigates the existing situation and suggests options for circular economic growth in Vietnamese textile and garment firms.

2. Theoretical

Circular economy

The notion of circular economy emerged in the 1990s, and there are several interpretations of the topic to this day. The Ellen Mac Arthur Foundation defines circular economy as "an economy that goes beyond the current model of artisanal mining industry, focusing on positive benefits for society as a whole." It includes gradually detaching economic activity from the consumption of finite resources, minimizing waste output, and shifting to renewable energy sources" (Ellen MacArthur Foundation 2013). This means that in a circular economy, trash is not just garbage; it is a resource that has not been used

correctly; the output waste of one sector will be the input resource of another industry, or a business's internal cycle. According to the European Commission on the Environment (EEA), circular economy refers to the material resource components of the economy, with an emphasis on recycling, reusing the material inputs of the economy, and using trash as a resource input to minimize primary resource consumption. The industrial ecology school goes much farther, proposing a circular economy approach to constructing circular manufacturing processes. This method is based on an examination of production processes, which clarifies the flows of materials and energy as well as their interactions with the environment. The study results are utilized to improve the material transportation cycle from inputs to products and trash (Iung and Levrat, 2014). Ausubel (1994) emphasized that the goal of the industrial ecology approach is to achieve less wasteful and more economical production processes. This approach requires cooperation between actors in the production and consumption chain to ensure effective resource management. Thanks to that, businesses will use resources more effectively in production, use waste more effectively and bring higher profits.

Similarly, some academics define circular economy as one that involves closed material cycles, limiting resource use and negative environmental implications. According to Sauve *et al.* (2016), circular economy refers to the process of creating and consuming things through a closed loop of raw materials, internalizing environmental externalities associated with resource extraction. They define circular economy as decreasing resource use, pollution, and waste at each stage of the product cycle. Michell (2015) underlines that the circular economy is about maximizing the value of materials and things by utilizing them as long as possible, recovering and reusing them. In the past, production managers were always interested in the production process from input to output, how to create the most added value. On the contrary, according to the concept of this school, it is necessary to move from production flow management to usage management and from maximizing added value to preserving maximum product value. Circular cycles will have no beginning or end, the manufacturer's responsibility does not stop after selling the product but must maintain the product value throughout its life cycle.

Businesses must slow the rate of product life cycle turnover. As with the school of industrial ecology, the purpose of this school is to eliminate waste in the environment. However, its emphasis is on building goods that can be used for a long time, are easy to repair, remanufacture, and convert, rather than on designing manufacturing processes that minimize inputs and process outputs. Waste is converted into input. McDonough and Braungart (2002) critique circular economy approaches that try to reduce hazardous waste, such as those of the industrial ecology school and the closed production loop school mentioned above. These two authors argue that the approach of trying to reduce harmful waste is not effective in the long term. They argue that from an ecological perspective, the circular economy aims to achieve the highest output from the least input and the least waste. However, even though it is small, production still creates waste and causes pollution. Furthermore, the waste recycling process also reduces material quality and therefore, recycled materials can only be used to produce low-value products. In other words, material quality

gradually decreases through the cycle. Therefore, industrial ecology only slows down but does not solve the root problems of resource depletion and environmental pollution. Therefore, they propose shifting the approach from minimizing harmful waste to a zero-waste production approach, or only discharging non-toxic waste, which even has a positive impact on the environment, causing for resources that not only do not lose quality through cyclic cycles but even increase in quality (Braungart *et al.*, 2006). They call this approach ecoeffectiveness, also known as the "cradle to cradle" approach. The eco-efficient school believes that wastes can be treated as "nutrients" and that they can be used safely and effectively in biological cycles or in industrial technical cycles. The principle of this school of thought is that everything should be designed to allow the continuous flow of materials in biological or technical cycles. To do this, businesses must control the entire product cycle and the best way to do this is to develop a rental model and provide product services. Businesses must also design high-quality products that are durable and easy to modify, decompose and recycle. In case of not directly controlling the entire supply chain or use, businesses must cooperate with parties throughout the entire supply chain. Circular economy is the key to solving the challenge of how to use natural resources and raw materials cheaply while generating the largest number of products while also benefiting the environment.



Fig 1: Model of the circular economy

Sustainable development

The World Commission on the Environment (WCED), currently known as the Brundtland Commission, defines sustainable development as "development that meets the needs of the present generation without jeopardizing future generations' ability to meet their own needs" (WCED, 1987). According to Article 3 of Vietnam's 2014 Environmental Protection Law, "Sustainable development is development that meets the needs of the present generation without jeopardizing future generations' ability to meet those needs." future on the basis of a close and harmonious combination of economic growth, ensuring social progress, and environmental protection. In the face of several new concerns, including the depletion of natural resources, environmental deterioration, and, most notably, climate change, attaining sustainable development is becoming

increasingly challenging.

The Sustainable Development Goals (SDGs), which are at the heart of the 2030 Agenda for Sustainable Development, were approved by the United Nations General Assembly in 2015. The Sustainable Development objectives are a worldwide development agenda that contains 17 core objectives broken into 169 linked goals to drive the global development plan until 2030. These objectives help to solve global concerns such as poverty, hunger, inequality, climate change, environmental degradation, peace, and justice (Lacy *et al.*, 2014). Although individual nations execute the Sustainable Development objectives, the success of some objectives is strongly dependent on the international order and patterns of global cooperation; action on these goals will have an influence beyond national borders. Therefore, implementing the Sustainable Development Goals will require efforts to achieve policy alignment – both vertically and horizontally – as well as the participation of countries around the world (Breuer, 2019). For that reason, the circular economy development trend is expected to gain consensus among countries to create connections to implement the Sustainable Development Goals. Research by Pla-Julián & Guevara (2019), Schoreder *et al.* (2018) emphasizes the close correlation between the principles of circular economy and the Sustainable Development Goals; At the same time, points out the role of circular economy as an alternative model for value creation in the production system, and is also an important factor in achieving sustainable development goals through clarify the direction of structural changes needed to ensure the transition of businesses to a circular production system. Schoreder and colleagues (2018) also affirm the interrelationship between circular economy and the Sustainable Development Goals: the emergence of circular economy initiatives contributes to achieving the Sustainable Development Goals and Achieving the Sustainable Development Goals will also contribute to making more circular economy activities possible. Ellen MacArthur Foundation (2013) highlights the significant contribution of circular economy to the Sustainable Development Goals by promoting more appropriate use of resources to realize circular economy. Korhonen *et al.* (2018) identify circular economy as a new business model that will lead to more Sustainable Development Goals by decoupling economic growth from the negative consequences of resource depletion and environmental degradation. Although the circular economy is considered a tool to support sustainable development, the transition to a circular economy will require a lot of costs, such as research and development, and subsidized capital investments. New products, as well as public spending on green infrastructure. As a result, an effective financial support structure and mechanism are required to provide the financial demands for the industrialization of the circular economy.

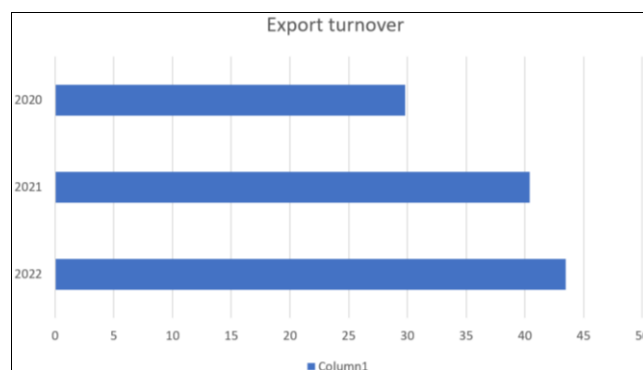
3. The current state of the circular economy in Vietnamese textile and apparel companies

Textile and garment is also the top industry in terms of labor recruitment in the country, drawing up to 2 million people. In addition, approximately 1 million people work in commercial and service companies, accounting for 25% of workers in the manufacturing and processing industry and 12.5% of all workers in the nation.

Workers in the industry earn an average of 8.5 million VND

per month, for a total annual income of 200,000 billion VND (about 8.6 billion USD), or 13 billion USD if trade and services are included.

Textile and garment exports from Vietnam account for 5.2% of the worldwide market. In 2021, Vietnam ranked fourth among the top ten garment exporting nations (after China, the EU, and Bangladesh) and seventh among textile exporting countries (after China, the EU, India, Turkey, Pakistan, and the United States). According to the Vietnam Textile and Apparel Association (VITAS), Vietnam's textile and apparel export turnover would reach 44 billion USD in 2022.



Source: Vitas

Fig 2: Vietnam's textile and garment export turnover over the years

The largest restriction of the textile sector, however, is the high amount of imported raw materials and accessories. We import a lot of fabric, cotton, and accessories, mostly from China (51%), Korea (9.7%), the EU (11.3%), and the United States (6%). Particularly in the RCEP import bloc. Textiles and clothing account for 71.6% of total import revenue.

Textiles and garments are the main environmental pollutants notwithstanding their significant economic contribution. According to studies, up to 200 liters of water are required to manufacture 1 kilogram of fiber. Fiber washing, bleaching, dyeing, and cleaning the finished product are all phases of the fiber production process that demand a lot of water.

In addition, the cotton plant itself consumes up to 19,000 liters of water to provide enough raw materials to produce one T-shirt. Besides, emissions and solid waste are also big problems for textiles.

It is these negative effects that have led some countries around the world to set sustainability standards for textiles imported into their countries. This requires Vietnam's textile and garment industry to change and "go green" for sustainable development. From that reality, one of the important directions of Vietnam's textile and garment industry is sustainable development towards circular business.

Given that sustainable development is a general trend, Vietnam's textile and garment industry has approached the circular economy model very early. Since 2017, the industry has established a Committee for Sustainable Development on environment and labor, coordinating with many organizations around the world to implement.

The process of sustainable growth and implementation of the circular economy model in Vietnam's textile and garment sector, on the other hand, is fraught with obstacles. The supply of raw materials, in particular cotton, fiber, fabric, and accessories, is primarily reliant on imports.

Businesses struggle to monitor the quality and sustainability of the supply chain since we are only approximately 30-35% self-sufficient.

Large textile industrial parks with centralized wastewater treatment systems have yet to be developed for the textile and dyeing stage due to a lack of development area planning. Due to environmental contamination issues, many municipalities still have the old perspective and are unwilling to license weaving and dyeing enterprises.

Besides, the rising cost of sustainable development makes many businesses, especially small and medium-sized enterprises, not determined or have enough resources to implement it.

On the other hand, most of Vietnam's textile and garment export markets are high-class, demanding markets with very high requirements for product hygiene and safety standards... In some markets today, customers change their products. Changing awareness from "fast fashion" to sustainable fashion towards circular business. In particular, they are concerned about supply chains being monitored for labor and environmental standards.

Another difficulty is the lack of high-quality human resources for industry 4.0 and the stages of weaving, dyeing, and design. While the need for capital is huge for sustainable development, green transformation, and circular business, it is also a challenge for Vietnam's textile and garment industry that not all businesses have the conditions to meet.

4. Conclusions

Basically, the circular economy promotes efficient use of resources, reuse and closed production cycles with the aim of reducing raw materials and energy inputs, extending product life cycles, and minimizing emissions. Generate waste and reduce negative impacts on the environment. The circular economy is consistent with the 3R principles of reduce - reuse - recycle.

Thus, implementing the circular economy model, textile and garment businesses will have many benefits and opportunities, including: Minimizing the use of non-renewable resources such as water, energy, and chemical fuels. jelly and raw materials; Reduce dependence on other countries, this dependence can lead to global political tensions; Significantly reduce greenhouse gas emissions, minimizing the impacts of climate change; Promote innovation across sectors through superior design of materials, products, systems and models; Add value for businesses, save for consumers; Create economic opportunities; Create new jobs (in innovation, design, recycling and creativity).

Despite its numerous benefits and possibilities, shifting to a circular economy is not an easy task, particularly for businesses with complicated and broad global supply networks, such as the textile industry. Sewing. To establish a circular economy that leads to sustainable growth, it is required to adopt solutions in stages, beginning with increasing awareness and progressing to improving institutions and execution. Specifically:

First, the legal framework for the creation of a circular economy must be completed. As a result, the Law on Environmental Protection must be amended and supplemented to include explicit duties for manufacturers and distributors in retrieving, sorting, and recycling waste goods, as well as paying for treatment expenses. eliminated

based on the number of products sold on the market; promulgate technology regulations and standards, encourage the development of markets for exchanging by-products and waste products to connect the chain between disposal - recycling - reuse so that waste and waste become secondary resources in the closed-loop system of the new production cycle; lifecycle project management Create a road map for developing and implementing environmental legislation and standards on par with the region's leading countries.

Second, there needs to be policies to encourage the formation and development of circular economic models; Complete and promulgate preferential policies and mechanisms to support the promotion of industry and environmental technology, including recycling industry; Enterprises must be the central driving force, the State plays a constructive role, and organizations and individual people participate in implementation. Vietnam can consider incorporating both international approaches to implementing circular economy into its roadmap, which are: (i) Approach by industry group, product, raw material or material (Group of sectors, products, materials and substances) - can be abbreviated as material approach; (ii) Systemic economy-wide implementation approach: establishing geographical spaces such as industrial parks, industrial clusters, model cities, business and production activities in these areas. This space is designed to connect with each other in cycles, then replicate successful models.

Third, develop an in-depth economic growth model that effectively uses input resources, applies science and technology to industries, particularly waste treatment to regenerate new materials, and specifies a roadmap to replace hazardous-material fuels and products with environmentally friendly fuels and materials, as well as products that can be used multiple times and have a longer useful life. Product applications that are beneficial.

Fourth, adjust energy planning to gradually reduce reliance on fossil fuel and hydropower energy sources; Control and selectively attract investment projects based on factors such as production scale, production technology, environmental techniques, and project implementation location; Create a technology conversion roadmap based on energy efficiency and waste reduction criteria.

For the textile industry in particular, industry planning is needed for sustainable development. Textile and garment is an industry that requires a large source of raw materials as well as a large workforce. The formation of areas with many textile and garment enterprises needs to be seriously considered. It will create favorable conditions for information exchange as well as more effective control of environmental pollution because the source of waste from this industry is very large. Specific, requiring separate technologies and techniques. Concentration will help reduce the pressure of waste treatment operations and increase revenue for businesses.

Fifth, build a database system on circular economy. This is an important database to serve the management and adjustment of circular economy implementation. In fact, the leading countries in circular economy in the world all have very good database systems on circular economy, while even basic data such as pollution and recycling rates Solid waste over the years in Vietnam has not yet been quantified.

Sixth, adopting the circular economy must be linked to technological advancement, the digital economy, and the Industrial Revolution. 4.0. When using the circular economy

concept, technological innovation is at the heart of the equation.

Seventh, promote international interchange and learning, particularly from nations that have effectively adopted the circular economy model, therefore transferring and adapting it to the individual conditions of each industry. Like each business. Create a Circular Economy Communication Strategy to educate producers and the general public about their responsibility to goods throughout their life cycle.

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