

Solutions for Processing and Recycling Fabric Scraps into Clothes and Accessories to Improve Economic Efficiency for Garment Factories in Hai Phong City

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Abstract: *The textile industry is one of the key industries in Vietnam. According to data from the World Trade Center, Vietnam has emerged as the top 3 countries with the world's largest export turnover in the textile industry, accounting for 6.4% of the global market share, behind China (31.6%) and Europe (27.9%). Hai Phong is a large city in Vietnam and also a major textile center of the country with an export turnover of 7.7 billion USD. However, the treatment of Waste Materials (NLT) - fabric scraps after production has not been given adequate attention, which causes significant waste and impacts on the environment and longterm development of the industry. This article explores the current situation of fabric scraps and the process of recycling fabric scraps into costumes and fashion accessories to bring about economic, environmental and social efficiency, especially economic efficiency. for garment factories in Hai Phong city, Vietnam.*

Keywords: The Texttile Industry; Recycling Fabric Scraps; Clothes; Economic Efficiency; Hai Phong city.

1. Overview of Hai Phong textile market

With a favorable geographical location, near the capital Hanoi, has the largest port in the North and Cat Bi international airport, infrastructure developed from the road system is known as the city of bridges, by water and modern air, Hai Phong is the second largest textile center in the country after City. Ho Chi Minh City with more than 150 textile and garment enterprises, including large enterprises such as May Hai, Comtec, and May 10, contribute 20% of the city's GDP. According to a report by the Vietnam Textile and Apparel Association (VITAS), export turnover in 2023 is 7.7 billion USD. The main export markets are still the US, EU, Japan and there are also many potential markets such as Korea and ASEAN.

Global textile and garment demand is growing, Free Trade Agreements (FTA) that Vietnam has signed such as EVFTA (Vietnam and the EU including 27 members), UKVFTA (Vietnam and the United Kingdom), CPTPP (Vietnam and Canada, Mexico, Peru, Chile, New Zealand, Australia, Japan, Singapore, Brunei, Malaysia, United Kingdom (signed Protocol of Accession on July 16, 2023)) or most recently VIFTA (Vietnam and Israel when negotiations started in December 2015 and officially signed on July 25, 2023) has brought many new opportunities to Vietnam and Hai Phong. Applying digital transformation and high technology toproduction while associated with sustainable development towards environmentally friendly products.

It is forecasted that Hai Phong's textile and garment industry will continue to grow in the coming years, aiming for an export turnover of 12 billion USD by 2025. However, to realize this goal, from now until 2030, the industry will Textile and garment will gradually shift from a focus on rapid development to a focus on sustainable development and circular business. Period 2031-2035, develop effectively and sustainably according to the circular economy model; Complete the domestic value chain and participate in a high-value position in the global supply chain. Export and domestic consumption with regional and world-class private brands.

2. Current status of waste fabric treatment in the textile industry in Hai Phong city

2.1. Current situation of fabric scraps in Hai Phong city

According to actual surveys, there are millions of tons of fabric scraps illegally gathered along the Cam River's left dike in Hoa Dong and Thuy Nguyen communes for a long time without being processed. There are piles that are discolored, showing that the gathering has been done for a long time, but strangely, this illegal gathering has never been handled. The fabric scraps were divided into many bundles and piled into large and small piles on a thousand-square-meter field of land, with no tarpaulin cover. In Hai Phong, there are also many units specializing in purchasing fabric scraps. Units that must be mentioned include: Hai Phong Branch - Phat Thanh Nam Production and Trading Company Limited (hamlet 13, Hoa Dong, Thuy Nguyen, Hai Phong City , Vietnam); Son Linh Labor Protection Production and Trading Joint Stock Company (No. 2, Street 1, An Trang Residential Area, An Dong Ward, An Duong District, Hai Phong City)...However, these units operate The movement is not too strong and little known.

In general, the method of handling fabric scraps in Hai Phong textile industry mostly stops at discharging fabric scraps into the environment, burning or burying without treatment. That increases environmental pollution and causes frustration for households surrounding the area where fabric scraps are illegally gathered. There are a few units that buy fabric scraps but they are not significant. The backlog of fabric scraps in Hai Phong's textile and garment

industry has not yet been given due attention and appropriate measures need to be taken to handle the above problem.

2.2. Current method of handling fabric scraps for the Textile and Garment industry in Hai Phong

From the current actual situation, the author group has researched and proposed a process for processing fabric scraps into costumes and fashion accessories in an appropriate and effective way. This process includes 5 basic steps as follows:

Step 1: Collect and sort fabric scraps

- Search and collect fabric scraps from sources: garment enterprises, garment factories , garment shops .
- Preliminary classification by size, material , color .
- ✓ *According to material:*
 - Jeans: highly durable, unique, youthful, dynamic.
 - Cotton: Absorbent, soft, suitable for many applications.
 - Polyester: Durable, wrinkle-resistant, difficult to absorb.
 - Wool: Warm, soft, elastic.
 - Silk: Luxurious, soft, breathable.
 - Synthetic fabric: Mixed with many types of fibers, diverse properties.
- ✓ *By size:* Large fabric scraps, small fabric scraps.
- ✓ *By color:* basic colors (white, black, ...) or by color palette.

Step 2: Prepare and cut fabric

- Use sharp scissors or a specialized fabric cutter to cut scraps of fabric.
- Draw a pattern or use a die to cut fabric scraps into desired shapes.
- Cut carefully and accurately to ensure pieces of fabric are used effectively.

Step 3: Design and patchwork

- Use fabric glue, needle and thread, or a sewing machine to join scraps of fabric.
- Make sure the seams are tight and secure to create a finished product.

Step 4: Sewing and finishing

- Add decorative details such as beads, lace, ribbons, ... to create a highlight for the product.
- Flatten the product after completion.

Step 5: Check quality

- ✓ Check seams:
 - Make sure the seams are tight, firm and even.
 - There are no loose, ruffled or defective seams.
 - Check if the parts are properly connected.
- ✓ Finished quality check:
 - The product does not have defects such as excess threads, exposed fabric glue, etc.
 - The product surface is flat and smooth, without wrinkles.
 - The product has uniform color and does not fade.
- ✓ Durability test:
 - Try gently pulling and tugging on the product to check the durability of the seams and fabric.
 - Make sure the product can withstand impact during use.
- ✓ Check aesthetics:
 - Evaluate whether the product is beautiful and attractive or not.
 - Does the product suit the customer's preferences and tastes?



Step 1: Collect and sort fabric scraps



Step 2: Prepare and cut fabric



Step 3: Design and patchwork



Step 4: Sewing and finishing



Step 5: Check quality

Picture 1: Process of processing fabric scraps

In fact, the research team has implemented and created many different product sets to meet the needs and tastes of consumers, especially the group targeting female customers, at a high level. ages 17 to 26 because this age group prefers freedom, creativity, and diverse styles.

Below are some pictures of clothing samples made from scrap fabric and have been circulated and consumed in the Hai Phong market.

2.3. Analyze the effectiveness of the fabric scraps treatment process in Hai Phong textile industry



Picture 2: The products have been supplied to the market

Through the process of learning, analyzing, researching, evaluating and implementing production to create actual products, the authors have realized the effectiveness of the rag processing process. This process plays a key role in protecting the environment, ensuring social security and improving economic efficiency for the Hai Phong Textile and Garment industry.

Firstly, about the environment: minimize waste released into the environment during the production process of textile and garment factories, avoid the risk of polluting water sources, and limit air pollution when burning fabric.

Second, about society: reduce unemployment rate in Hai Phong create conditions for people who do not have a main income (housewives) have additional sources of income.

Third, about economics:

- Fabric scraps from garment factories and businesses seem to be thrown away, but when recycled, they become unique clothes and accessories sold on the market, creating a fashion cycle, bringing economic efficiency.
- Doing business in a small retail model will cost less management costs, labor costs, factory rental costs and bring higher profits.

2.4. General assessment on the treatment and recycling of fabric scraps into outfits and accessories to improve economic efficiency for garment factories in Hai Phong.

2.4.1. Benefits achieved:

Firstly, receive and take advantage of digital transformation capabilities on social networking platforms: facebook, tiktok, instagram, ... to spread and increase product recognition.

Monday, the design of recycled fabric scraps brings unique and personalized products, different from what is already on the market to meet the fashion needs of young people: freedom - creativity - diverse styles.

Third, it is suitable and practical for housewives who are capable of sewing, young people who are passionate about fashion design but have limited capital because this is a small business model that does not cost much money. Management costs, no need to invest in complex machinery, equipment and production lines and still bring profits.

Wednesday, Recycled fashion from scrap fabric reflects the trends and requirements of modern consumers towards a sustainable and environmentally responsible life, thereby creating a fashion cycle.

2.4.2. Limitations and causes of limitations:

First, only the small business model can bring expected profits and economic efficiency. Because if you expand your business model, your initial costs will increase, leading to an increase in product prices and a decrease in purchasing volume.

Second, sustainable fashion is increasingly taking over global trend. Therefore, in the near future it is likely that there will be more competitors for input sources, and the price of fabric scraps will tend to increase. If there are more similar business models, customers will have more choices, and the revenue and profit of the model will also change.

Third, potential customers primarily are women between 17-26 years old, so the customer base is shrinking, and the source of output products also faces more difficulties.

3. Some solutions for processing and recycling fabric scraps into outfits and accessories to improve economic efficiency for garment factories in Hai Phong.

Firstly, it is necessary to promptly update market needs to constantly innovate and diversify designs, and at the same time strengthen marketing activities through communication channels, organizing promotions and discounts, giving gifts to attract customers to consume products.

Second, strengthen negotiations with suppliers, build long-term, reliable cooperative relationships to obtain preferential prices and stable supply. Join industry associations to have favorable opportunities to exchange information, cooperate in sourcing and negotiate prices.

Third, provide professional, thoughtful and dedicated services and have a flexible return and exchange policy so that customers can feel secure and stick with us for a long time. At the same time, accept design and sewing according to customer requirements.

Fourth, research and develop and devise strategies in combination with typical green partners such as: TimTay - Sustainability is pursuing the spirit of "zero-waste"; Moi Dien - Sustainability is a quality product; Metiseko: Sustainability is persistently promoting Vietnamese culture; Fashion4Freedom - Sustainability is preserving handicraft villages; The 31 - "Live slowly to love yourself more"; Must be green: Leinné – Couture, sustainable to honor the value of Vietnamese handicrafts.

Fifth, focus on combining with sustainable fashion brands with potential male customers such as: Archive Sashiko- Sustainability is "patching and repairing", Kilomet109 - Preserving and promoting Vietnamese traditions to expand consumption markets.

Sixth, combine with stores specializing in gifts, accessories, and souvenirs in Hai Phong to increase recognition with customers and expand product supply.

4. Conclusion

Along with the development of the textile industry in Hai Phong, especially the fast fashion trend, in addition to socio-economic benefits, during the production process, businesses and garment factories waste waste. produces a large volume of industrial solid waste, mainly composed of fabric scraps. The problem of treating industrial waste fabric scraps from businesses and garment factories is still limited to collection, burial and becoming a threat to the environment. The scraps of fabric seemed worthless, but when processed and recycled by the research team into costumes and accompanying fashion accessories, they became useful products, contributing to reducing local waste, turning waste into resources, creating profitable livelihoods and promoting a circular economy.

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