

Will Circularity Reshape Apparel Trade Patterns? Explore EU Retailers' Sourcing Strategies for Clothing Made from Recycled Textile Materials

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Background

As environmental awareness among consumers grows, more and more EU retailers begin to carry clothing made from recycled textile materials (Repp et al., 2021). Numerous studies have examined the production or design process of recycled clothing or consumers' purchasing behavior for such products (e.g., Kim et al., 2021; Juanga-Labayen et al., 2022). However, as a critical research gap, where clothing using recycled textiles sold in the EU market came from and what their supply chains look like remain a "black box."

This study explores retailers' sourcing strategies for clothing made from recycled textile materials in the five largest EU apparel retail markets, including the UK, Italy, France, Germany, and Spain. These markets collectively represented over 60% of the EU's apparel retail sales in 2022 (Euromonitor, 2023). The study's findings created new knowledge regarding the sourcing patterns for clothing made from recycled textile materials and shed new light on such products' unique supply chains. The results also offer valuable input for retailers interested in expanding into the EU's recycled clothing markets.

Literature review

In theory, EU retailers' sourcing patterns for clothing made from recycled textile materials could display several distinct patterns. **First**, due to the unique complex supply chain of making clothing using recycled textiles, which requires both intensive labor and capital input, EU retailers would leverage a diverse sourcing base to meet their product needs (Ho & Cao, 2019; Juanga-Labayen et al., 2022). **Second**, near-shoring from within the EU will be a critical component of EU retailers' sourcing pattern for clothing made from recycled textiles, especially for those requiring more frequent replenishment and targeting the high-end market segment (López et al., 2022; Eppinger, 2022). **Third**, as the factor proportion trade theory suggests, EU retailers' product assortment for clothing made from recycled textile materials could differ by a supplying country's economic advancement level regarding product sophistication, variety, and overall production costs (Chiarvesio et al., 2013; Gereffi, 2019; Pandit et al., 2019).

Method

The study's data was collected from EDITED, a fashion big data tool capturing millions of apparel products sold in the EU market (EDITED, 2023). Based on the latest data available and to reveal relatively stable sourcing patterns, 5,000 Stock-Keeping Units (SKUs) of clothing made from recycled textile materials sold in the examined five EU markets between January 2021 and May 2023 were randomly selected by EDITED (i.e., the clothing item was 100% made from recycled textile materials according to its product description).

The multivariate analysis of variance (MANOVA) was adopted to explore the research question, which has the advantage of dealing with multiple dependent variables in the model without inflating Type I errors (Todorov & Filzmoser, 2010). The model included five dependent variables measuring a clothing item's features:

- *Assortment diversity*: the number of SKUs available for the clothing item.
- *Product sophistication*: the technical sophistication of making the clothing item based on EDITED's classification (simple products=1, i.e., T-shirts, shirts, swimwear, and hosiery; medium sophisticated products=2, i.e., bottoms and tops other than T-shirts and shirts; sophisticated products=3, i.e., outerwear, dresses, and suits).
- *Replenishment*: the replenishment frequency of a clothing item during the examined period.
- *Market segment*: the market segment of the clothing item based on EDITED's classification (value market =1; mass market =2; premium market =3; luxury market =4).
- *Retail price*: a clothing item's listed original retail price according to EDITED.

The model included two independent variables corresponding to the hypotheses:

- *Region*: the origin of where the clothing item was made, such as Asia, Europe, America, and Africa (United Nations, 2022).
- *Development*: based on the United Nation (2022)'s classification, if the clothing was made by a developed country=1 and if it was made by a developing country=0.

Results and discussions

First, EU retailers adopted a diverse sourcing base for clothing made from recycled textile materials, with the sampled clothing coming from 40 countries, including developed and developing economies across Asia, America, the EU, and Africa. **Second**, MANOVA's main effect was statistically significant at the 99% confidence level for variables *Region* based on Pillai's trace test ($p\text{-value} < .01$). The result suggested that an exporting country's geographic location statistically impacted the type of clothing using recycled textile materials that EU retailers sourced from there. Also, consistent with the prediction, the between-subjects and post hoc tests revealed that recycled clothing sourced from EU countries statistically tended to focus on the premium and luxury market segments and had a higher average price than other regions (i.e., $p\text{-value} < .01$ for variables *Market segment* and *Retail price*). However, no statistical evidence showed that EU-made clothing was more frequently replenished (i.e., $p\text{-value} > .05$ for *Replenishment*). **Third**, MANOVA's main effect was also statistically significant at the 99% confidence level for variables *Development* based on Pillai's trace test ($p\text{-value} < .01$). The between-subject test further showed that products sourced from developing countries statistically were more diverse (i.e., $p\text{-value} < .01$ for *Assortment diversity*). However, no statistical evidence shows that an exporting country's economic development level affected product sophistication, replenishment frequency, and pricing for clothing made from recycled textile materials imported by retailers in the five EU markets.

Implications and future research agenda

The study's findings generated valuable new insights into EU retailers' sourcing patterns for clothing made from recycled textile materials and have two critical implications. **First**, while existing studies often suggest "local for local" textile recycling, the study's findings revealed promising *global* sourcing opportunities for making clothing using recycled textile materials (Buchel et al., 2022). **Second**, the results indicated that when it comes to producing clothing using recycled textiles, low-wage developing countries demonstrated no significant competitive advantages over developed countries in the EU markets in aspects like product variety and production costs. Thus, fashion companies' increasing use of recycled textile materials may have long-term implications for the world's apparel trade and sourcing patterns.

With data availability, future studies can dig deeper into the supply chain of clothing made from recycled textile materials, covering tier 2 or even tier 3 suppliers (i.e., yarn and fabric producers). Exploring trade policy's roles in promoting retailers' sourcing of clothing made from recycled textile materials and promoting fashion circularity could also be interesting.

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