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Recycled Textile and its Impact to the Environment Cases of Imported Recycled Clothes in Indonesia

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Keywords
Recycled Fashion, Environment awareness, industry, young generation's perceptions

Abstract
The increasing volume of imported second-hand clothes and textile waste in Indonesia has raised environmental concerns, particularly in the textile and fashion industry. The production process in this sector, which includes yarn fiber production, fabric manufacturing, and value-enhancing treatments like printing and dyeing, often contradicts the principles of environmental sustainability. This study aims to analyze the environmental impact of imported recycled clothes in Indonesia, focusing on the challenges related to product quality, accessibility, and public perception. The research also aims to provide strategic recommendations to improve sustainable textile consumption and waste management practices. This research employs a qualitative systematic review, collecting secondary data from scholarly databases like Scopus, Web of Science, and Google Scholar. Additionally, semi-structured interviews were conducted to gain insights into public perceptions of recycled fashion. The study presents novelty by focusing on recycled textiles imported into Indonesia, an area that has received limited attention compared to studies in developed countries. The research highlights the growing awareness among the younger generation regarding recycled fashion, the barriers to its adoption, and the significant environmental implications of textile waste. The results indicate that while awareness of recycled fashion is high, practical barriers such as insufficient information, price concerns, and limited accessibility hinder its adoption. The study proposes strategies for improving public awareness through targeted communication and suggests that enhancing the availability and affordability of recycled fashion products could lead to greater consumer acceptance and sustainable practices in Indonesia's fashion industry.

INTRODUCTION

The background of this study was inspired by the increasing volume of imported second-hand clothing and textile waste entering Indonesia. In the textile and fashion garment industry, several stages are required to produce clothing items. The process begins with the production of yarn and fibers, followed by fabric manufacturing, and finally the application of value-enhancing treatments such as printing, dyeing, and garment remanufacturing. However, these processes often contradict the fundamental principles of environmental sustainability. Therefore, environmentally conscious and sustainable production methods are urgently needed to support recycling practices and reduce environmental damage (Cheng et al., 2023; Hegab et al., 2023; Odeyemi et al., 2024). Moreover, the rapid changes in fashion trends and the shortening of fashion cycles have become major contributors to environmental degradation and the disruption of ecological balance. In recent years, various innovative initiatives and technological developments have emerged to provide sustainable solutions within the

production and consumption systems of the modern fashion industry (Ikram, 2022; Glogar et al., 2025).

In the textile and garment sector, the concept of sustainability refers to efforts aimed at meeting the expectations of both consumers and producers while minimizing negative impacts on people, the environment, and economic systems (Plakantonaki et al., 2023; Abbate et al., 2023). The rapid growth in clothing consumption over the past few decades has led to significant environmental pollution and social inequality issues (Naqvi et al., 2024). Currently, more than half of all textiles contain synthetic materials, and synthetic fibers account for more than two-thirds of total textile production. This situation has contributed to a dramatic increase in textile output and waste generation (Stefan et al., 2022). As a result, sustainability issues have gained increasing attention in the industrial sector, particularly due to growing global concerns regarding environmental degradation and unsustainable consumption patterns.

A sustainable society requires a balanced integration of economic, social, and environmental aspects of development. From an ecological perspective, sustainability involves protecting ecosystems, biodiversity, and natural resources. This includes reducing pollution levels, minimizing waste generation, and limiting the negative impacts of human activities on the environment (Kumar & Kumar, 2025). Social sustainability emphasizes the importance of inclusive communities, the protection of human rights, and equitable access to resources (Ghosh, 2025; Hamid, 2020; Krysovatyy et al., 2022). It also involves improving well-being across all age groups, reducing social inequality, and preserving cultural diversity. Meanwhile, economic sustainability focuses on maintaining economic growth without compromising the ability of future generations to meet their own needs. This includes efficient resource management, responsible production, and sustainable consumption practices (Elsawy & Youssef, 2023).

A previous study by Juanga-Labayen et al. (2022) shows that the rapid growth of the clothing and textile industry, particularly due to fast fashion trends, has significantly increased global textile waste, with about 75% ending up in landfills and only 25% being recycled or reused. Reuse is identified as a more sustainable option than recycling, and various technologies such as anaerobic digestion, fermentation, composting, fiber regeneration, and thermal recovery have been developed to improve textile waste management. However, major challenges remain in improving collection systems, automating sorting processes, and implementing extended producer responsibility (EPR) and circular economy systems, which require collaboration among stakeholders.

Crestani et al. (2023) show that achieving textile circularity requires accurate data and strong regulations to support sustainability. Material Flow Analysis (MFA) is an effective tool for measuring textile flows and environmental impacts. Increasing textile consumption and low recycling rates highlight the need for stronger waste prevention strategies.

Goncalves et al. (2024) demonstrate that Life Cycle Assessment (LCA), using openLCA software and the ecoinvent database, provides an accurate evaluation of the environmental impacts of textile products. The results show that recycled cotton produced in Portugal has lower environmental impacts than conventional cotton and performs better than organic cotton in most categories. The proposed "Envi-Score" labeling system helps communicate environmental performance clearly and supports more sustainable consumer decision-making.

This study presents novelty by examining the environmental impact of imported recycled clothing in Indonesia, a topic that has received limited attention compared to studies focusing mainly on textile production and recycling technologies in developed countries. Unlike previous research, this study integrates the analysis of public awareness, consumer perceptions, and environmental implications related to the circulation of imported second-hand clothing within the Indonesian context. The objective of this research is to analyze the environmental impact of imported recycled textiles, identify challenges related to product quality,

accessibility, and public perception, and propose strategic approaches to improve sustainable textile consumption and waste management practices in Indonesia. The benefit of this research is to provide new insights into the challenges faced in managing textile waste and promoting the sustainable consumption of used clothing in Indonesia, as well as to offer strategic recommendations for improving textile consumption practices and more environmentally friendly waste management. Thus, this research is expected to contribute to the development of policies that support the sustainability of the textile industry in Indonesia.

METHOD

This research employed a qualitative systematic review to identify methods and analyze relevant understandings related to qualitative research methodology and sustainable textile practices. Secondary data were collected through keyword-based searches in books and online scholarly databases, including Scopus, Web of Science, and Google Scholar. The search terms included keywords such as recycled textiles, sustainable fashion, second-hand clothing imports, textile waste management, and environmental impact of recycled clothing. In addition, open-access journals, official reports, and selected mass media sources in Indonesia were used to obtain contextual information and support the analysis. These secondary data sources were carefully reviewed, compared, and synthesized to develop a comprehensive understanding of the topic. Furthermore, this qualitative approach was complemented by a limited number of semi-structured interviews with selected respondents to obtain supporting insights regarding public perceptions of imported recycled clothing and its environmental implications. The combination of literature review and interview data enabled triangulation of findings and strengthened the validity of the conclusions drawn in this study.

RESULT AND DISCUSSION

Results

Quantitative Analysis Results

1. Age Distribution:

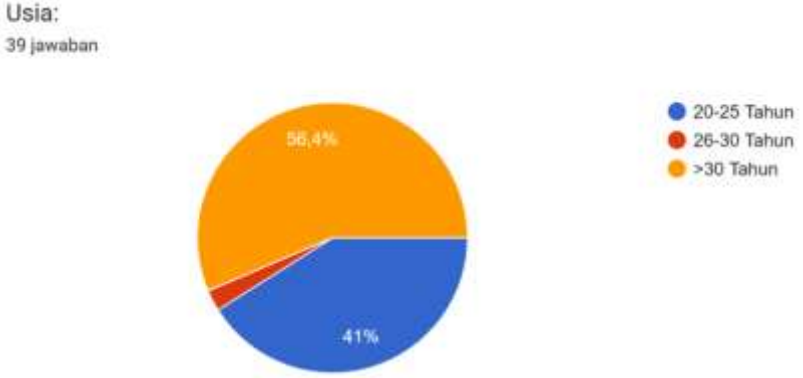

Figure 1. Age Distribution of Respondents
Source: Survey Data, 2024

- 30 Years: 22 respondents
- 20-25 Years: 16 respondents
- 26-30 Years: 1 respondent

2. Gender Distribution

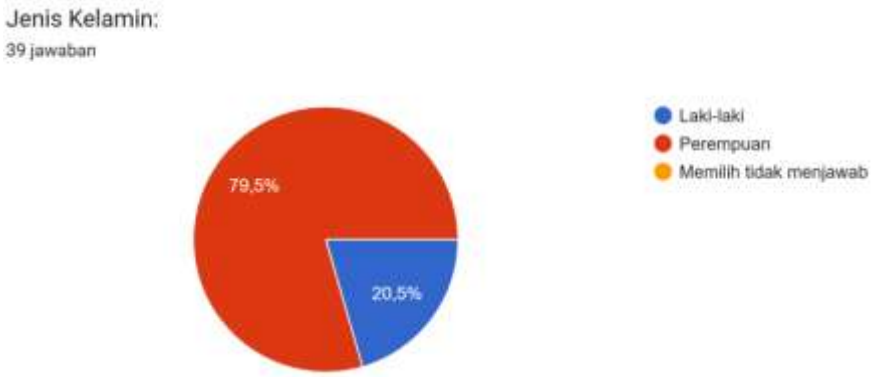

Figure 2. Gender Distribution of Respondents
Source: Survey Data, 2024

- Female: 31 respondents
- Male: 8 respondents

3. Distribution of Domicile Cities (there are variations of city writing that need to be standardized):

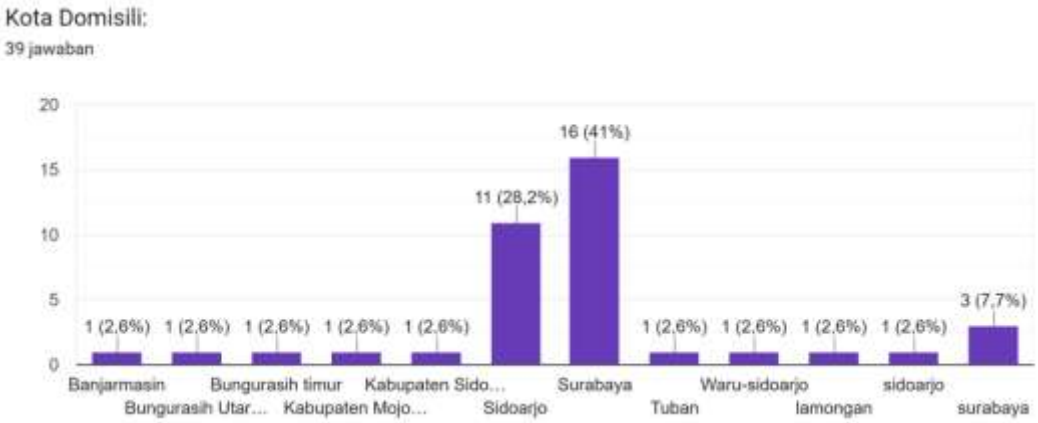

Figure 3. Respondents' Domicile City Distribution
Source: Survey Data, 2024

- Surabaya: 19 respondents (including variations such as "Surabaya", "surabaya")
- Sidoarjo: 13 respondents (including variations such as "Sidoarjo", "sidoarjo", "Waru-sidoarjo")
- Others: 7 respondents (Mojokerto, Banjarmasin, Tuban, Lamongan, etc.)

4. Knowledge of Recycled Fashion:

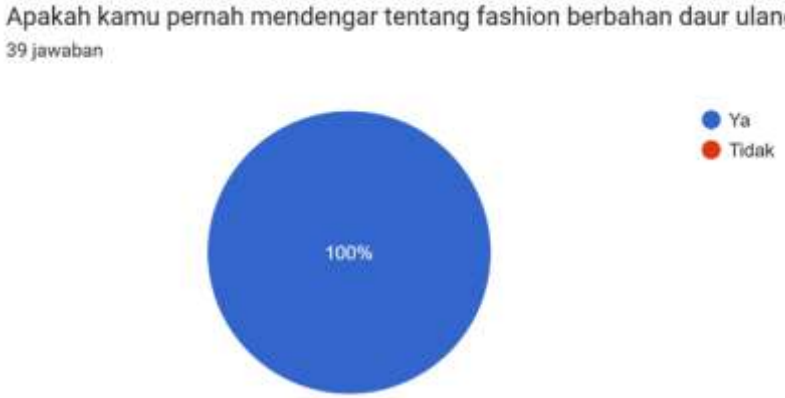

Figure 4. Knowledge of Recycled Fashion
Source: Survey Data, 2024

- Yes: 39 respondents (all respondents have heard of recycled fashion)

5. Interest in Recycled Fashion:
   - Quite interested: 22 respondents
   - Very interested: 8 respondents
   - Not very interested: 7 respondents
   - Moderately interested & Not very interested: 2 respondents (choose two options)

6. Experience of Buying Recycled Fashion Products:

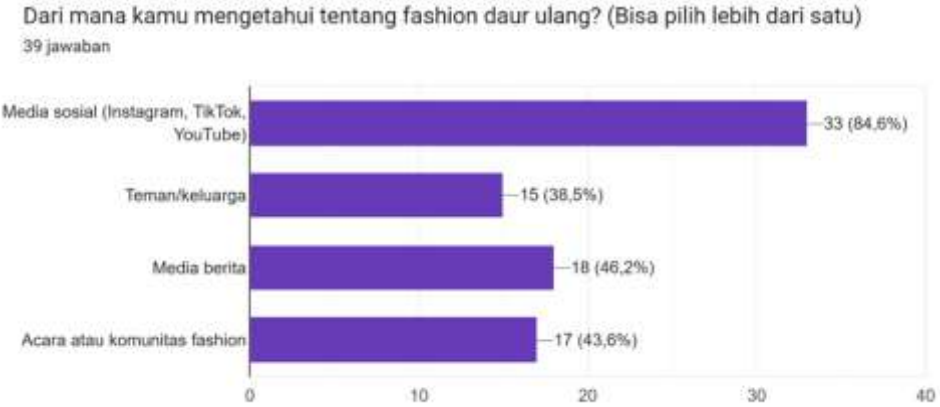

Figure 5. Experience of Buying Recycled Fashion Products
Source: Survey Data, 2024

   - No: 22 respondents
   - Yes: 17 respondents

7. Willingness to Try Buying in the Future:

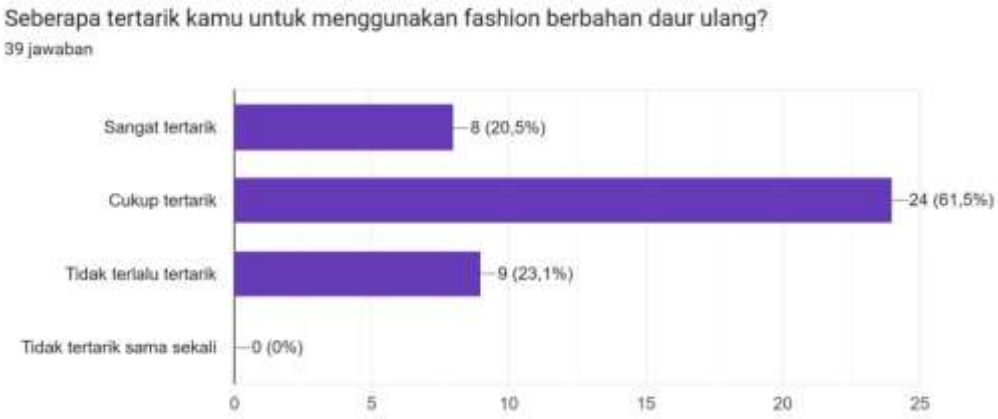

Figure 6. Willingness to Purchase Recycled Fashion Products in the Future
Source: Survey Data, 2024

   - Yes: 37 respondents
   - No: 2 respondents

From the open-ended answers, some key findings include:
Reasons for interest or disinterest in recycled fashion:

- Many are interested because they want to protect the environment and reduce the negative impact of textiles.
- Some are not interested due to a lack of sewing skills or the notion that recycled fashion is less attractive.

Obstacles in using recycled fashion:
- Limited product availability.
- Lack of information about recycled fashion.
- The price is considered too expensive.
- Hygiene and product quality factors.

Suggestions for reducing textile waste:
- Work with communities for recycling.
- Using textile waste as a creative fashion material.
- Educate the public about the importance of waste management.

Expectations for the recycling fashion industry in Indonesia:
- It is hoped that this industry will develop as part of the creative economy.
- Parallel to other existing fashion lines.
- More innovative to attract more consumers.

Based on the quantitative analysis results, the demographic characteristics show that most respondents belonged to the young adult age group, particularly those aged 20–25 years and 30 years. This indicates that younger generations are the main group exposed to environmental issues, including recycled fashion. Younger consumers are generally more open to sustainability concepts, which may explain why awareness of recycled fashion among respondents was very high. The findings show that all respondents were aware of recycled fashion, indicating that awareness of this concept has already been widely established. This finding is consistent with Skeiryte et al., (2022) who stated that younger generations tend to demonstrate greater concern for environmental issues and are more receptive to sustainable fashion concepts.

The gender distribution shows that female respondents dominated the sample, suggesting that women are more actively involved in fashion-related topics, including environmentally friendly clothing practices. Since women often play a significant role in fashion purchasing decisions, their awareness of recycled fashion may contribute to increasing acceptance of recycled textile products. This result supports the findings of Sener et al., (2022) who reported that female consumers are generally more concerned about environmental impacts associated with fashion consumption.

The distribution of respondents' domicile indicates that most participants were from Surabaya and Sidoarjo, with several others from surrounding cities. This suggests that urban communities may have better access to information about recycled fashion through social media, fashion markets, and environmental campaigns. However, despite the high level of awareness, the results also reveal that the lack of effective information regarding product quality, price, and accessibility remains a major obstacle. This finding aligns with Ikhsan et al., (2024) who emphasized that insufficient information about product quality and environmental benefits can hinder consumers' purchasing decisions.

Although awareness is high, respondents' level of interest in recycled fashion varies. Most respondents expressed that they were quite interested or very interested, while some respondents showed hesitation. This indicates that social perceptions of recycled fashion are still mixed. The hesitation is mainly related to concerns about price, product quality, and product attractiveness. This finding is consistent with Khan et al., (2024) who explained that consumers' perceptions of product aesthetics and quality strongly influence their willingness to adopt sustainable fashion products.

The results related to purchasing experience show that more than half of the respondents had never purchased recycled fashion products, although most respondents expressed willingness to try purchasing such products in the future. This indicates that recycled fashion adoption in Indonesia is still in the early stage. The willingness to try suggests significant market potential; however, barriers such as limited product availability, lack of information, and perceived high prices continue to influence purchasing decisions. This finding is supported by Busalim et al., (2022) who found that despite growing awareness of sustainable fashion, actual purchasing behavior is often constrained by price sensitivity and product accessibility.

From the open-ended responses, several obstacles were identified in the use of recycled fashion products. Limited product availability and insufficient information about hygiene and quality were among the most frequently mentioned barriers. Price perception was also identified as an important factor, as some respondents believe recycled fashion products are more expensive than conventional clothing. This indicates that improving communication regarding product standards and environmental benefits is essential to increase consumer trust. This result is supported by Baghirov & Zhang, (2024) who highlighted that product quality perception plays a crucial role in shaping consumer confidence toward alternative fashion products.

Environmental motivation emerged as one of the strongest factors influencing interest in recycled fashion. Many respondents indicated that they are interested in recycled fashion because they want to protect the environment and reduce textile waste. This finding demonstrates that recycled textiles have strong potential to reduce environmental damage caused by textile waste, particularly from imported recycled clothing that contributes to the increasing volume of textile waste in Indonesia. This finding supports Karim & Hasan, (2022) who emphasized that recycled textiles represent an important strategy in reducing environmental impacts of the fashion industry, particularly in minimizing textile waste generation.

To address these challenges, respondents suggested several strategies emphasizing the importance of strategic communication. Such communication may include social media campaigns, community-based recycling programs, and educational initiatives focusing on textile waste management. Effective communication strategies are expected to improve public understanding of recycled fashion quality, environmental benefits, and sustainability values. This finding is consistent with Wang et al., (2025) who stated that public education and community collaboration are essential in promoting sustainable fashion practices.

Furthermore, respondents expressed expectations that the recycled fashion industry in Indonesia should continue to grow as part of the creative economy. Innovation in design and production is considered necessary to improve product attractiveness and competitiveness with conventional fashion products. By combining environmental awareness with creative design innovation, recycled fashion products may become more widely accepted by consumers. This finding supports Ma et al., (2024) who identified design innovation as a key factor in enhancing consumer acceptance of sustainable fashion products.

Overall, the findings demonstrate that awareness of recycled fashion among respondents is already high; however, practical barriers such as lack of effective information, price perception, and limited accessibility continue to affect consumer behavior. Social perceptions remain mixed, indicating that although interest exists, hesitation still occurs among certain consumers. Therefore, strategic communication through social media, community engagement, and educational promotion is necessary to increase public acceptance of recycled fashion. Strengthening these efforts is expected to support the development of recycled textiles as a sustainable solution to reduce environmental impacts caused by textile waste in Indonesia.

CONCLUSION

The findings show that although awareness of recycled fashion among respondents is very high, its adoption remains limited due to insufficient and ineffective information regarding product quality, pricing, and accessibility, as well as mixed social perceptions that create hesitation among consumers. While interest in recycled fashion exists, concerns about price competitiveness and product quality continue to hinder wider acceptance. Therefore, more strategic and targeted communication is needed, particularly through social media, community-based campaigns, and educational initiatives that deliver clear and credible information. Collaboration among stakeholders—such as brands, environmental organizations, and government institutions—is essential to strengthen awareness efforts, especially by emphasizing environmental benefits, hygiene standards, and product quality. Improving affordability and accessibility through subsidies or more efficient sustainable production methods could further encourage adoption. By overcoming these challenges, recycled fashion has strong potential to grow within the creative economy while supporting environmental sustainability in Indonesia. Future research should explore consumer behavior through longitudinal or experimental approaches to better understand how pricing strategies, trust in product quality, and targeted communication influence long-term adoption of recycled fashion.

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