

Impact of Circular Economy in Fashion Industry

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Abstract—The fashion industry is a significant contributor to global environmental challenges, with fast fashion at the center of these issues. Characterized by its rapid production cycles and affordability, fast fashion generates substantial carbon emissions, water pollution, and textile waste. Circular economy practices are emerging as a sustainable alternative, aiming to reduce waste, encourage recycling, and extend product lifecycles. This study focuses on how Danish fashion brands are implementing circular economy principles and evaluates their potential to disrupt fast fashion using Schumpeter's theory of creative destruction. Through interviews with representatives from two Danish fashion brands and a venture capital expert, this research highlights the opportunities and challenges of adopting circular models in the fashion industry. Findings suggest that circular practices not only reduce environmental impacts but also position the industry for sustainable growth by replacing outdated and unsustainable fast fashion practices.

I. INTRODUCTION

Now a days the fashion industries face the significant challenges on sustainability, with the rapid growth in the fashion industries the growth in pollution, waste, and environmental degradation is also increased. This rapid and inexpensive production of clothing design which is easily available to the customer has become the reason for industry's environmental failings. The contribution of this industry is growing by adding carbon di oxide in global emission, responsible for water pollution by adding wastewater in it and so on [1],[2]. [3]. In this era of fast fashion, the concept of circular economy is considered as solution. This concept is different from the linear economy as it does not operate on "take, make, dispose" model. In circular economy "reuse, recycle and regeneration of material" is used to create a closed-loop system. As we reuse the and regenerate the material therefore it reduce waste, conserve resources, and also extends product lifecycle. . This reduces the waste by creating a closed loop system. Here in this article the

application of circular fashion in Danish fashion band is observed. Globally, the circular economy is becoming more and more popular, especially in Denmark, a nation known for its forward-thinking attitude to sustainability.

From the initiatives like the Copenhagen Fashion Week, based on theme "Sustain" happed on February 2023 evidence the leadership of Denmark in sustainable fashion. In this theme the main agenda is industry's acknowledgement of its environmental responsibilities and also its commitment for sustainable practices. As the Danish brand is at the forefront of this transformation, they integrate the concept of circular principles into their operation to address the growing demand for sustainable fashion.

In this article we have investigated how Danish fashion brands incorporate the circular economy in womenswear and accessories sectors to reduce their environmental footprint. However, it is also examining whether these practices disrupt the fast fashion model, a phenomenon that aligns with Schumpeter's theory of creative destruction. The theory posits that innovation drives societal progress by replacing outdated systems with more efficient ones. In the field of fashion, circular economy practices could replace fast fashion's unsustainable processes, and drive the industry toward more sustainable future. To fulfil these objectives the motivations and strategies of two Danish fashion brands that have embraced circular practices was analysed.

II. LITERATURE REVIEW

1. Sustainable Development in Fashion

Here, the sustainable development was defined by Brundtland Commission in 1987, which consider the basic needs of the present time without compromising the ability of future generations needs. In fashion industry, this means the reduction of environmental and social costs of production along

with maintaining economical viability. Sustainable fashion includes practices like ethical sourcing, fair labour conditions, and also minimizing consumption. Report generated from United Nations shows that to achieve sustainability requires a fundamental shift from linear to circular production models. The adoption of renewable energy sources, water-efficient processes, and biodegradable materials are key components of sustainable development in the fashion sector (UNEP, 2019). Furthermore, consumer awareness campaigns and certifications, such as the Global Organic Textile Standard (GOTS), are instrumental in driving demand for sustainable products. However, researchers such as Kozlowski et al. (2019) argue that achieving sustainability in fashion also requires addressing systemic issues, including the culture of overconsumption driven by fast fashion.

2. The Environmental Impact of Fast Fashion

The fast fashion model thrives on high production rates and low prices, often at the expense of environmental and social sustainability. The industry generates approximately 8% of global carbon emissions, making it one of the largest contributors to climate change (Meier, 2021). The production of synthetic fibers, such as polyester, releases significant amounts of greenhouse gases, while the widespread use of toxic dyes contributes to water pollution.

Additionally, the industry is responsible for massive amounts of textile waste. In developed countries, the average consumer discards more than 30 kilograms of clothing per year, much of which ends up in landfills or incinerators. According to the Ellen MacArthur Foundation (2017), less than 1% of material used in clothing production is recycled into new garments, representing a \$500 billion annual loss to the global economy. The environmental footprint of fast fashion is compounded by its reliance on supply chains that exploit labor in developing countries, raising ethical concerns alongside environmental ones (Bick et al., 2018).

The urgency of addressing these issues is underscored by industrial reports from McKinsey and the United Nations, which predict that without significant changes, the fashion industry will struggle to meet the Paris Agreement's goal of limiting global temperature rise to 1.5°C by 2030. These reports

emphasize the need for innovation in sustainable practices to mitigate the industry's impact.

3. Circular Economy in Fashion

The circular economy represents a shift from the traditional "take-make-dispose" model to one that prioritizes resource efficiency and waste reduction. Circular economy practices in fashion include:

- **Recycling and Upcycling:** Transforming textile waste into new garments or higher-value products. For example, companies like Patagonia have adopted closed-loop systems to recycle used clothing.
- **Product Longevity:** Designing garments for durability and reparability to extend their lifecycle. Brands such as Nudie Jeans offer free repairs for their products, encouraging customers to keep them longer.
- **Material Innovation:** Developing sustainable materials, such as biodegradable textiles and fabrics made from recycled plastics, to reduce reliance on virgin resources.
- **Resale and Sharing Models:** Platforms like ThredUp and Rent the Runway enable consumers to buy second-hand clothing or rent outfits, reducing the demand for new products.

According to the Ellen MacArthur Foundation (2017), adopting circular economy practices could reduce greenhouse gas emissions from the fashion industry by up to 44% by 2030. Additionally, circular models align with consumer trends, as studies indicate that younger consumers increasingly value sustainability and are willing to pay more for eco-friendly products (PwC, 2020). However, challenges remain, including the scalability of recycling technologies, the high costs of sustainable materials, and the need for widespread consumer adoption.

4. Schumpeter's Theory of Creative Destruction

Schumpeter's theory of creative destruction provides a valuable framework for understanding how innovation can disrupt traditional industries. The theory posits that economic progress is driven by the replacement of outdated systems with new and more efficient ones. In the context of fashion, circular economy practices represent a form of creative destruction by challenging the dominance of fast fashion and introducing sustainable alternatives.

For example, the integration of digital technologies, such as blockchain for supply chain transparency and AI for optimizing production, is transforming how the industry operates. These innovations align with the principles of creative destruction by enabling more efficient and sustainable processes. According to Schumpeter (1944), this cycle of innovation not only drives economic growth but also addresses societal challenges, making it particularly relevant to the intersection of fashion and sustainability.

Several studies have explored the potential of creative destruction in fashion. For instance, Lüdeke-Freund et al. (2019) argue that circular business models can disrupt fast fashion by shifting the focus from volume-driven sales to value-driven solutions. However, researchers also caution that the transition to circular models requires systemic changes, including policy support, infrastructure development, and changes in consumer behavior.

5. The Intersection of Circular Economy and Creative Destruction

The combination of circular economy practices and creative destruction presents a powerful opportunity to transform the fashion industry. By addressing the environmental and social shortcomings of fast fashion, circular innovations have the potential to create a new economic model that balances sustainability with profitability. Studies from McKinsey and the Ellen MacArthur Foundation emphasize that this transition is not only necessary but also economically viable, as circular practices can unlock new revenue streams and reduce costs associated with waste and resource consumption. However, achieving this transformation requires overcoming several barriers. Policymakers play a crucial role in incentivizing sustainable practices through regulations and subsidies. Additionally, collaboration across the supply chain is essential to scale circular innovations and ensure their effectiveness. As such, further research is needed to explore the long-term implications of integrating circular economy principles into the fashion industry and their alignment with Schumpeter's theory.

III. METHODOLOGY

This research employs a qualitative approach, drawing on semi-structured interviews with two

Danish fashion brands—one specializing in womenswear and the other in accessories—that have implemented circular economy practices. Additionally, insights from a venture capital expert provide a broader perspective on the Danish fashion industry's supply chain.

The interviews focus on understanding the motivations, strategies, and challenges associated with adopting circular practices. By analyzing these perspectives, the study aims to identify the factors driving the transition to sustainable models and the potential for these practices to disrupt fast fashion.

A. Findings and Discussion

1. Implementation of Circular Practices:

The two brands studied have adopted various circular economy strategies, including:

- **Material Recycling:** Both brands repurpose textile waste into new products, reducing reliance on virgin materials and lowering their environmental footprint.
- **Durable Design:** Products are designed for longevity, with a focus on quality and repairability. This counters the disposable culture of fast fashion.
- **Consumer Education:** The brands actively engage consumers through campaigns that highlight the benefits of sustainable fashion and encourage responsible consumption.

2. Challenges in Transitioning to Circular Models:

While circular practices offer significant environmental benefits, they also present challenges:

- **High Costs:** Recycling and sustainable production methods are often more expensive than traditional processes.
- **Scalability:** Expanding circular practices to meet global demand requires significant investment and infrastructure development.
- **Consumer Behavior:** Shifting consumer preferences away from fast fashion's convenience and low prices remains a significant barrier.

3. Potential for Disruption:

The findings suggest that circular economy practices align with Schumpeter's theory of creative destruction by challenging the fast fashion model. By

offering sustainable alternatives, these practices create a new framework for production and consumption that renders traditional fast fashion processes obsolete. However, achieving widespread disruption will require overcoming the challenges of scalability, cost, and consumer adoption.

IV. CONCLUSION

This study highlights the transformative potential of circular economy practices in the fashion industry. Danish brands are at the forefront of this transition, demonstrating how recycling, durable design, and consumer engagement can reduce environmental impact and challenge the dominance of fast fashion. These practices embody the principles of creative destruction, offering a pathway to a more sustainable and economically viable fashion industry. Future research should explore the global scalability of circular models and their economic implications. By addressing these areas, the fashion industry can move closer to achieving its sustainability goals while fostering innovation and growth.

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