CONSUMING FASHION

PLANNING LONG LIFE CYCLE OF CONTINUING PRODUCTS

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Abstract

Today, the fashion industry faces sociocultural pressures from stakeholders to reduce ecological impacts and adopt sustainable innovation. This shift responds to the traditional consumption model, emphasizing the need for environmentally friendly practices and open ecosystems. It challenges the constant turnover of brand collections fueled by fleeting social media trends such as those seen on platforms such as TikTok or Instagram. By delving into these patterns where clothing swiftly circulates among consumer wardrobes, it scrutinizes and challenges the deeply ingrained culture of overconsumption. This article investigates the potential of design-driven initiatives to catalyze innovations capable of disrupting prevailing consumption patterns. Building upon a previous study conducted by the authors (D'Itria & Colombi, 2023), it further examines the dynamics of innovation within the fashion industry and the evolving roles of designers in addressing the issue of consumed fashion. Consumed fashion uses strategies to prevent disposal through intentional design across creation, production, and distribution. It emphasizes long product lifecycles and the design-for-longevity approach, focusing on improving rather than replacing items. This scenario shift promotes sustainability and reduces waste by extending the lifespan of fashion items. With this perspective, the article encourages reflection on consumption practices and the interrelation between design and consumption, fostering a more responsible and sustainable fashion industry.

Keywords: Consumed Fashion; Design for Longevity; Design-driven Innovation; Fashion Industry Transformation

INTRODUCTION

Sustainability is now the paradigm of reference in the fashion industry, extending beyond socially responsible brands or eco-friendly products (Thorisdottir & Johannsdottir, 2020; Khandual & Pradhan, 2019). This shift addresses the growing demand from consumers for sustainable fashion choices. As consumers become more knowledgeable about materials and manufacturing processes, they increasingly seek ecologically and socially responsible options for their wardrobes (Marschlich & Dhanesh, 2024; Ray & Nayak, 2023; Harris et al., 2016; Bhardwaj & Fairhurst, 2010). This trend reflects a desire to align personal values with purchasing decisions, indicating a broader movement toward sustainability in fashion. As ethical and environmentally conscious brands gain

priority, the fashion industry must adapt, making sustainability a core aspect of its practices (Tandon et al., 2023).

Over the past three decades, such practices have grappled with many challenges, ranging from labor rights violations to ecological catastrophes stemming from manufacturing practices (Gabriel, 2021). At the core of many of these problems lies overconsumption, the linchpin perpetuating the myriad issues confronting the fashion sector today (Wizinsky, 2022). The expansive scale and reach of the fashion industry significantly contribute to problems like excessive water usage, heightened carbon emissions, and rampant waste generation. Overconsumption sustains and fuels growth within an already saturated fashion market, perpetuating a cycle of demand and supply that exacerbates environmental and social challenges (Demirdjian & Orzada, 2023).

The magnitude and speed of clothing consumption are immense, with over 100 billion new garments bought annually, of which ninety-nine percent cannot be repurposed (Ellen MacArthur Foundation, 2017). Despite the substantial volume of clothing produced, global production and consumption are projected to increase by 63% by 2030, from 62 million tons to 102 million tons in 2030 (European Commission, 2022). In Europe, about 5.8 million tons of textiles are discarded annually, approximately 11 kg per person (European Commission, 2022), and every second somewhere in the world, a truckload of textiles is landfilled or incinerated (Ellen McArthur Foundation, 2017).

These numbers highlight the intrinsic unsustainability of how clothing is produced, consumed, and disposed of, presenting a significant hurdle in tackling the larger sustainability concerns within the fashion industry (Matthes et al., 2021). Relying solely on improving eco-efficiency is unlikely to accomplish environmental sustainability objectives sufficiently (Huppes & Ishikawa, 2007). While enhancing eco-efficiency can yield short-term environmental benefits, it may not address the root causes of sustainability challenges within complex systems. This approach often fails to consider broader socio-economic and systemic factors contributing to environmental degradation. A more comprehensive strategy is necessary to achieve sustainability goals, integrating diverse perspectives, considering long-term impacts, and addressing underlying structural issues. According to those above, addressing overconsumption is imperative for any meaningful progress toward sustainability within the fashion industry. It necessitates a fundamental shift in consumption patterns, production practices, and business models (Pal, 2017). Such a shift can be obtained by encouraging conscious purchasing decisions, promoting longevity in clothing, and advocating for a culture of reuse and repair (Maguire & Fahy, 2023). These are essential steps toward combating the detrimental effects of overconsumption, which intrinsically ask for design interventions to reduce excessive buying and discarding of clothing, thereby lessening the fashion industry's impacts. The authors have investigated such design interventions in a previous study (D'Itria & Colombi, 2023). Here, they discussed a conceptual framework for understanding the micro- and macro-dynamics

of open innovation in a sustainable fashion using a quadruple helix model. These dynamics operate along four primary directions: innovative sourcing methods, different consumption patterns, new technical expertise, and alternative end-of-life strategies. Within the proposed framework, these avenues exist together, creating an innovation ecosystem where individual actions can occur independently, generating positive cycles and working together systematically to maximize the desired circular impacts. This was accomplished by identifying and systematizing four design-driven interventions: reusing, repairing, refashioning, and recycling (Fig. 01).

This article thoroughly examines the model, emphasizing the pivotal role of designers in fostering innovation within the fashion sector and combating overconsumption. The authors stress the importance of conducting a comprehensive review of consumption patterns, highlighting the intrinsic connection between design processes and consumer behaviors. They point out the importance of exploring the concept of refashioning, which offers designers valuable insights into mitigating the negative impacts of unsustainable consumption by examining designers' practices and resource management approaches. Specifically, this entails devising merchandising strategies to prolong product through durability to revolutionize the planning-and-production processes. Adopting a design-for-longevity approach emerges as a pivotal tactic for designers, shifting their focus to enhancing existing products rather than introducing new ones (Benkirane et al., 2022; Gwilt & Pal, 2017; Hasling & Ræbild, 2017). This signifies a fundamental shift in perspective, where the emphasis is placed on extending the lifespan of fashion items through thoughtful design and production strategies. Such an approach seeks to cultivate emotional and material resilience, advocating for shared usage, inheritance, and versatility, thereby mitigating excessive consumption. However, this focus on enduring design may pose challenges in aligning with transient trends, such as the current fads promoted by platforms such as TikTok, but refashioning works on disrupting the processes that lead to final clothing consumption. Designers can significantly preserve resources, reduce waste, and decrease emissions, essential steps towards achieving a more sustainable future. Section 2 details the methodology, materials, and process of mapping fashion companies' refashioning efforts. This study

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phase was carried out iteratively to shape the data, which informed the subsequent refinement of the research model. Section 3 presents and discusses the results by showing how the current refashioning ecosystem acts through rethinking or hacking fashion merchandising, reporting case studies emblematic of the dimension. Section 4 concludes the article by elaborating on how the presented model offers research opportunities to explore how design can develop new strategies for promoting sustainable innovation in the fashion industry by extending the lifespan of products by strategizing the merchandising plan.

METHODOLOGY

The study began with a desk research phase, followed by a case study approach to narrow down the extensive scope of the investigation. According to Yin (2003), this method is particularly effective for analyzing existing knowledge on a specific topic, as it addresses research complexities by converting the individual case into a manageable component that can be explored within its original context, thus encompassing various elements and attributes (Priya, 2021). Data were gathered from the Fashion in Process Research Lab at Politecnico di Milano, from the authors' participation in two international field studies (Fashion SEEDS: Fashion Societal, Economic & Environmental Design-led Sustainability, 2018-2022; Support report mapping sustainable fashion opportunities for SMEs, 2019) with a consortium of European academic and research institutions, and from the outcomes of one author's doctoral research (D'Itria, 2022). The first step entailed mapping 12 fashion companies' practices in the refashioning dimension, which helped to create strategic measures to increase awareness about virgin materials and encourage reconsideration of longevity (Tab. 01). These initiatives adopt a multidisciplinary approach to develop and test solutions that align with current legislation while facilitating the adoption of financially sustainable innovations. After evaluating all 12 identified companies, three initiatives were chosen as case studies for further examination (Tab. 02).

The final case study database comprised various sources, including research papers, documentaries, corporate reports, scientific articles, trade press publications, and government documents. Following the identification of case studies, an additional qualitative phase was conducted using secondary data collected through supplementary document research. This enabled a more comprehensive profiling of the companies and an assessment of their integration of the refashioning dimension. Specifically, the focus was on how companies actively pursued sustainable design to

Country	Sector Name		
Korea	Apparel	Edit+	
Ireland	Apparel	NuWardrobe	
Italy	Apparel	Artknit Studio	
Italy	Apparel	Flavia La Rocca	
Italy	Apparel	Simon Cracker	
Denmark	Apparel	GANNI	
Denmark	Apparel	Son of a Tailor	
Japan	Apparel Zozotown		
Korea	Apparel	Edit+	
UK	Apparel	Benjamin Fox	
UK	Apparel	Raeburn	
USA	Apparel	Norma Kamali	

Tab. 01

minimize the life cycle impacts of their products and preserve resources by preventing waste through merchandising strategies and responsible planning. This study establishes a systematic approach to utilize higher-level codes in constructing an innovative model for developing a refashioning system to enhance product longevity and mitigate overconsumption. Higher-level codes involve identifying critical themes from the research and organizing them following the methodology proposed by Corbin and Strauss (1990). This concept envisions an ecosystem where designers promote advancements by planning a fashion collection based on sustainable design approaches nurtured by dynamically upgrading the fashion products, responsible manufacturing practices that produce only when needed and in quantities required, and conscious consumption strategies that promote new or different responsible purchase paths. By seamlessly integrating these dimensions, it is possible to maximize the longlife cycle of designed products. These three macro-categories were formulated based on strategies to promote longevity and prevent overconsumption (Haase & Laursen, 2022). They illustrate how innovation unfolds through systemic processes encompassing all product generation and supply stages, tailored to their respective functions, characteristics, and potentials. By employing such approaches, ecosystems are cultivated to preserve materials and minimize waste through refashioning, thus

ensuring resources circulate at their maximum value through rethinking the merchandising framework. The subsequent section outlines the proposed model and examines the investigated cases, presenting them as derivatives of the original ecosystem model, focusing on the design, manufacturing, and distribution phases. While the scenarios discussed may not cover all possibilities, they represent typical operations showcasing the roles of designers and their strategic efforts in establishing longevity solutions for preventing consumed fashion (Simon & Goes, 2013).

RESULTS AND DISCUSSION

Based on what has been discussed, this paper aims to analyze how fashion enterprises formulate merchandising tactics centered around product durability to transform planning and production processes within the industry. This section presents the results from the methodology on how these qualitative implementations take three main paths: sustainable design approaches, responsible manufacturing practices, and conscious consumption strategies.

Sustainable design approaches refer to the way in which products are designed. This means adapting methods that prioritize long-term environmental, social, and economic viable process steps and priorities before proceeding with the development of the products (Rathinamoorthy, 2020). Responsible manufacturing practices refer to minimizing the industry's negative impact on the environment and society. This means employing eco-friendly materials, production techniques, and supply chain management. (Roy et al., 2024)

Country	Sector	Name	
Denmark	Apparel	GANNI (Repeat)	Ganni is a contemporary ready- to-wear fashion brand for women. Introduced in 2019, GANNI Re- peat initially emerged as a rental service to prolong the lifespan of GANNI garments and inspire our community to adopt a more circular fashion ethos.
Italy	Apparel	Artknit Studio	The Italian brand produces made- to-order knitted garments. By producing only what is ordered, they reduce inventory waste. By collecting a few information (age, weight, and height), they create a perfect-fitting knit within about 14 days.
Korea	Apparel	Edit+	This brand designs genderless modular clothing that serves a technical purpose beyond fashion and aesthetics.

Table 02

Conscious consumption strategies refer to offering/ using different consumption modes that emerged as a response to established consumption patterns. In a prevailing market framework, these alternatives present viable and responsible options for consumers. (Radhakrishnan, 2020). Considering the above, this paper presents the identified trajectories of the current industry contexts to determine design directions that could inspire and promote new meaningful perspectives in sustainable fashion design.

From the operational point of view, the research identified three macro themes in approaching consumed goods longevity practices from a design perspective that emerged at the intersection of the investigated paths (Fig. 2):

- Dynamic Upgrade;
- On-demand Manufacturing;
- Alternative Purchasing.

Dynamic upgrade in fashion refers to enhancing existing garments through design interventions rather than replacing them with new ones. This approach involves exploring possibilities beyond traditional garment trends by leveraging dynamic components and advanced technology. Instead of following conventional practices of discarding old garments for new ones, dynamic upgrade emphasizes the continuous improvement and transformation of existing pieces. By incorporating new design elements, materials, and technologies, garments can be upgraded to meet evolving consumer preferences while minimizing waste and environmental impact. This approach reflects a shift towards sustainable and resource-efficient practices within the fashion industry, where creativity and innovation play key roles in driving positive change.

On-demand manufacturing involves companies aiming to reduce consumption and resource wastage by establishing longer-lasting connections between products and consumers. The objective is to optimize processes through a systematic approach to planning, purchasing, and selling goods, focusing on maximizing profits akin to a long-term investment. This approach prioritizes the durability of products, ensuring that they meet consumer needs over an extended period. By producing items only when there is demand, companies can minimize excess inventory and associated waste while tailoring products to specific customer preferences. Overall, on-demand manufacturing represents a shift towards more sustainable and efficient business practices within





the retail industry, aligning economic goals with environmental responsibility.

Alternative purchasing practices contribute to sustainability by extending the lifespan of garments by rethinking product distribution. These practices offer access to various items without ownership, thereby minimizing waste and conserving resources. Consumers can make more conscious choices through alternative purchasing models such as rental services, second-hand markets, and clothing swaps. Additionally, these practices encourage a shift from the traditional linear consumption model towards a more circular and sustainable approach, where products are valued for longevity and shared among multiple users. Alternative purchasing promotes a more responsible and environmentally friendly way of consuming fashion.

According to the directions above, three case studies are introduced, each exemplifying one of the suggested categories. These cases epitomize the themes associated with hacking merchandising plans for longevity by design. The companies have garnered recognition for their efforts in sustainable fashion, promoting durability against overconsumption, and reshaping the needs of consumers in the industry.

Edit+ is a Korean brand operating in the dynamic upgrading category. Created by a former North Face executive, Edit+ is a sustainability-oriented athleisure brand that employs modular design and prioritizes digital-first production methods. The brand aims to popularize the concept of editing one's wardrobe through modular-based design. Centered around sportswear, Edit+ allows wearers to customize their garments to suit their surroundings. For instance, the Take the Winter+ Padding Coat offers eight distinct designs, such as a waist-length jacket, a vest, or a knee-length coat. This brand embodies a reimagining of merchandising as a project brief through the hacking of collection architecture. Starting with basic garments, it alters them using modules or other design-driven solutions, aiming to curtail overconsumption. The brand addresses the need to purchase new items by enhancing existing pieces. This approach fosters sustainability by extending the lifespan of garments and minimizing waste associated with constant turnover in fashion trends. Furthermore, it encourages consumers to engage in a more thoughtful and deliberate approach to their wardrobe choices, emphasizing the value of versatility and longevity in clothing. Artknit Studio, an Italian brand specializing in on-demand manufacturing, prioritizes sustainability through its zero-waste policy. Unlike conventional fashion brands, Artknit Studio forgoes seasonal collections in favor of a single permanent line. They create made-to-order items tailored to each customer's preferences, crafted upon request, and directly shipped from artisans. This ensures top-notch quality and minimizes the environmental impact of mass production and excess inventory. Artknit Studio further supports sustainability with its repair program, aimed at refurbishing garments to extend their lifespan and minimize waste. These initiatives promote lasting connections between products and consumers, optimizing processes and enhancing customer satisfaction through personalized, environmentally conscious practices. Ganni, a Danish brand, operates within the realm of conscious consumerism. Introduced in 2019, GANNI Repeat began as a rental platform, aiming to extend the life of GANNI pieces and promote a more circular fashion model. Recognizing the clash between the fashion industry's focus on novelty and consumption and the urgency of sustainability, GANNI emphasizes accountability and responsibility. By transforming garments from previous collections into new remade items, GANNI reduces the use of new materials and mitigates production's adverse effects. GANNI Repeat's rental service allows customers to enjoy redesigned clothing, prolonging garment lifespans and reducing the need for new purchases. These alternative purchasing methods enhance sustainability by

extending garment lifespans and decreasing the demand for new production, revolutionizing product distribution by providing access to diverse items without ownership, thereby reducing waste and preserving resources. The enhancements in the qualitative knowledge

system extend beyond individual companies, impacting the broader fashion industry. These improvements shape new design and production schemes, emphasizing sustainability. Moreover, they foster shifts in consumer behavior, encouraging more environmentally conscious choices. This holistic approach drives innovation and progress towards a more sustainable future for the fashion industry.

CONCLUSIONS

This article introduces an interpretative model aimed at codifying the design solutions that affect the development of merchandising strategies to extend product lifespan, thereby hacking planning and production processes within the fashion industry. Adopting a design-for-longevity approach emerges as a pivotal tactic, shifting designers' focus towards enhancing existing products rather than continually introducing new ones. This model prompts reflection on consumption practices, processes, and impacts, advocating for a more critical and responsible approach toward sustainable transformation. Specifically, the proposed model integrates product design with existing consumption patterns, recognizing their direct influence on a product's lifecycle from conception to disposal. By prioritizing sustainable design and creating products that promote mindful consumption, we have the potential to reshape individuals' engagement with clothing, reducing environmental impact and the need for frequent replacement. The proposed synergy between design and consumption addresses overconsumption and rapid obsolescence, fostering more sustainable and conscious choices within the fashion industry. In conclusion, the authors acknowledge certain limitations, mainly focusing on the fashion industry within developed economies. While not presenting novel theories, the study provides valuable insights into a system model rooted in refashioning the consumed fashion goods. This model is crafted from various strategies aimed at enhancing product longevity while simultaneously addressing issues of overconsumption and overproduction. Such an analysis serves as a foundational reference for future research endeavors. It invites

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us to delve deeper into the implications, challenges, and advantages of fostering a sustainable fashion system. Thus, the study contributes to the ongoing discourse surrounding sustainability in the fashion industry, urging stakeholders to prioritize eco-conscious practices for long-term prosperity. Future research in this area should explore various factors influencing fashion companies' design choices, investigating further strategies to prolong the lifespan of fashion products, such as using innovative materials or offering services instead of new goods. Understanding the barriers to adopting longevity-focused models is vital for devising effective solutions. Furthermore, future studies should analyze the broader impacts of implementing such models on supply chains, consumer behavior, and environmental sustainability. This proposed research agenda encourages contemplation of consumption practices and their repercussions, emphasizing the interconnectedness between design processes and consumption trends. Through an integrated approach, designers can play a pivotal role in cultivating a more critical and responsible ethos within the fashion industry, thereby facilitating sustainable transformation.

CAPTIONS

[Fig. 01] Study model grafting points (D'Itria & Colombi, 2023)

[Fig. 02] Representation of the Refashioning Consumed Fashion System. Original work by the authors (D'itria & Colombi, 2024)

[Tab. 01] Mapped Companies

[Tab. 02] Case Studies

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