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Proceedings of the 2nd Designing Retail & Services Futures Colloquium: Sustainable Retail and Services Futures

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**Designing Retail
& Services
Futures**

Proceedings of
the 2nd Designing Retail
& Services Futures Colloquium

Sustainable Retail and Services Futures

Milan—14-15 May 2025

EDITORS

Katelijn Quartier
Valeria M. Iannilli,
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Tommaso Elli
Ilse Prinsloo

Design
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**POLITECNICO
MILANO 1863**

**DIPARTIMENTO
DI DESIGN**

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About the Colloquium

The Special Interest Group (SIG) **Designing Retail & Services Futures** was established in 2021 under the guidance of the **Design Research Society (DRS)**. It seeks to advance knowledge on the role of design within contemporary retail and hospitality contexts, focusing on how design contributes to the development of spaces, services, and experiences. The SIG addresses multiple disciplinary domains, including interior architecture, branding, marketing, strategic and service design, design management, and consumer psychology, to better understand the interplay between physical and digital environments and the shifting expectations of users.

Although the value of design has been the subject of scholarly investigation for decades, such inquiries have often developed in a fragmented manner. Disciplinary silos and divergent methodologies have limited the integration of insights across interconnected domains such as retail, services, and hospitality. This colloquium responds to the need for more cohesive perspectives, aiming to consolidate definitions, align research approaches, and foster dialogue among academic and professional communities.

The 2025 edition places particular emphasis on sustainability as both a design imperative and a catalyst for innovation. Key themes include the transformation of retail and hospitality spaces, the integration of narrative and visual storytelling, and the adoption of co-creative and participatory design processes. Contributions also examine the adaptive reuse of urban spaces, the resilience of informal economies, and the role of emerging technologies—such as AI and immersive media—in shaping future scenarios.

Bridging theory and practice, the colloquium positions design not merely as a means to support transactions or aesthetic enhancement, but as a strategic and ethical tool for fostering environmental responsibility, social inclusion, and cultural relevance. The proceedings collectively reflect a commitment to reimagining the future of retail and hospitality in ways that are sustainable, inclusive, and context sensitive.

Organizers

The colloquium was hosted by the Design Department of Politecnico di Milano and organized with the support of the Communication office of the Design Department.

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Section 1

Visual Storytelling & Brand Experience

This session investigates how physical space and visual elements serve as tools for brand storytelling and identity communication. From façades and shop windows to hybrid spaces and omnichannel strategies, it explores how retail shapes meaningful consumer experiences.

The Shop Window as a Communication Platform: From Product Showcase to Experiential Narratives

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Abstract: Fashion has always been closely linked to communication, evolving from aesthetic styles to a language expressing social identities and values. This process has been amplified by digital tools, creating dynamic communicative networks across media. Contemporary fashion communication encompasses all stages of production and meaning-making, blending tangible and intangible elements. Shop windows, traditionally just product displays, have taken on a new role as spaces for experimentation that bridge the physical and digital. This article examines how shop windows have evolved from simple boundaries between store interiors and real life to active spaces for engaging the public, transforming them from passive observers into co-creators of meaning.

Keywords: Fashion Communication; Performing Arts; Windows Display; Fashion Shows

1. The Relationship Between Fashion and Communication in Modern Fashion Industry

Fashion and communication have always been intrinsically linked, shaping contemporary culture while reflecting societal values (Kawamura, 2018). Traditionally perceived as a set of aesthetic trends, fashion has evolved into a dynamic communicative force, expressing identity, cultural norms, and social aspirations (Levine, 1972). From the early days of fashion publishing to the digital revolution, fashion has developed into a complex system of signs, conveying meanings through clothing, imagery, and media. Fashion items now carry multifaceted social, cultural, and aesthetic values that shift in response to time and context, transforming fashion into a constantly interpreted and reinterpreted language (Barnard, 1996; Maclachlan, 2018). In this evolving communication process, the public has increasingly become an active participant, prompting brands and creatives to adopt new methods of engagement that foster interaction between designers, consumers, and the media. Fashion is continuously redefined by these dynamic exchanges.

As this interaction between brands and consumers becomes more direct, the role of fashion shop windows has also undergone a transformation. Once static displays for

products and seasonal themes, shop windows have evolved into sites of creative experimentation, enriched by technological advancements. Fashion brands now engage with their audiences through a multifaceted communication system that incorporates digital platforms, events, and in-store experiences into a coherent narrative, one that goes beyond mere product display. Retail spaces, once merely venues for commerce, have become dynamic cultural hubs where fashion communicates meaning beyond the product, offering an integrated shopping experience (Iannilli & Spagnoli, 2021; Homburg et al., 2017). In this context, shop windows, storefronts, and in-store displays have become essential components of a brand's communication strategy (Potvin, 2009), enhancing the storytelling process and enabling a more interactive and engaging consumer experience (Rocamora, 2016).

In today's hyper-connected and fluid era (Bauman, 2000), traditional boundaries no longer confine fashion communication. It is dispersed across multiple and interconnected platforms, offering consumers a richer, more participatory form of engagement where they are not merely spectators of performance but active participants and protagonists. At the same time, they also become both actors and spectators in the entertainment experience crafted by fashion brands, fostering the emergence of a "palimpsest" concept in fashion communication. This term refers to the strategic sequencing of content across various channels, creating a continuous, immersive experience that guides consumers through a brand's narrative (Barra, 2015). In this way, brands engage consumers on emotional, aesthetic, and cultural levels, positioning fashion as a continuous experience rather than a static transaction.

Building upon these foundations, the article aims to explore, through a historical lens, the evolving significance of the shop window as a site for creative experimentation, stimulating various forms of interaction not only between the interior and exterior of retail spaces, or between products and customers, but increasingly between diverse creative domains. While recognising the importance of technological advancements, the article focuses on examining the role of direct, physical interaction in shop window design, customer experience, and engagement strategies. In this context, technology is considered more as a communication channel that facilitates these interactions, rather than as the primary tool driving the overall strategy.

2. New Strategies, Old Practices: The Window Display and the Shift Toward Spectacularisation

Since the early days of mass marketing, the window display has been a fundamental tool in commercial communication, playing a crucial role in the pre-purchase experience of the consumer. Lights, displays, and mannequins have always been the primary elements shaping this experience, making the window a powerful vehicle for attraction and seduction. As early as the 20th century, with the rise of department stores in France, England, and later in the United States, a "spectacular modernity" (Yon, 2024) emerged, where the design of interiors—especially window displays—became one of the cornerstones of retail space design. Window displays evolved from simple product showcases to "wonder

rooms", designed to pique the curiosity of passers-by and entice them into increasingly spectacular temples of consumption.

Thus, the window display became a performative and interactive space, rich with unexpected scenery and performances that actively engaged the public. Interestingly, even in its simplest forms, the window had to be more than just a space for exhibition. In an increasingly competitive world, with the emergence of large commercial chains, mere visibility was no longer sufficient to generate interest and stimulate purchases. Visual performance became essential.

2.1 The Window as a Stage: Chas. W. Morton and Early Performances

One of the pioneering figures in this field was Chas. W. Morton, a window dresser for the department store Weinstock, Lubin & Co. in Sacramento, California. Morton designed displays that became renowned for their innovation and ability to transform the window into a theatrical stage. In 1891, during the opening of a new store, he designed a window display featuring a mechanical rose that slowly opened from the floor, revealing a young girl dressed as a fairy interacting with the displayed products. This type of event was repeated three times daily, creating a regular spectacle for the residents of Sacramento, who would stop to witness this daily show.

In 1898, Morton created another famous display, the "Vanishing Lady", an innovation combining a living model with a motorised frame, typical of the magic shows of the time. This installation startled and captivated the audience, featuring a real woman's bust in the window that appeared to float without a body, creating an illusion that fascinated onlookers (Morton, 1898). The success was such that crowds would gather outside the window, forcing the Weinstock's department store to install iron protections to prevent damage to the glass. These early examples marked a significant shift: the window was no longer merely a place for displaying products but became an experience tied to emotions, engagement, and surprise. However, Morton's avant-garde windows contrasted with the store's interior, where customers still sat on stools at long wooden counters, waiting for sales assistants to bring out the goods for inspection. His windows demonstrate how the evolution of consumer culture was far from uniform (Kassis, 2012, pp. 28-29).

The window became part of a broader commercial communication system, including newspapers, billboards, events, and fashion shows. The fashion show, in particular, would become another central element in this process.

2.2 The Window Becomes Spectacle: Fashion Shows and Visual Communication

Fashion shows were already an established reality in France, where they were reserved for the elite, but in the United States, they were reinterpreted to cater to a broader, more diverse audience. While in Europe, fashion shows took place mainly in the ateliers of couturiers, they were organised in department stores, theatres, and windows in the United States. A significant example was the 1911 *Style Parade* organised by the Diamond and Sons department store in Providence, Rhode Island. The fashion show was reserved for the store's clients and open to the public on the street. After parading inside the store, models moved to a specially designed window, where, upon opening the curtain, they

performed for the passers-by. This interaction between the store and the street, between interior and exterior, had the power to attract a curious crowd, demonstrating the effectiveness of the window as a direct communication tool.

In the 1920s, artistic avant-gardes also recognised and exploited the importance of retail space and its staging as a communication and experimentation tool, with experiments more aligned with art than business. In this sense, it is worth remembering that the *Boutique Simultanée* opened in 1925 during the *Exposition Internationale des Arts Décoratifs* in Paris by Sonia Delaunay in collaboration with furrier Jacques Heim and leather goods maker Girau-Gilbert (Godefroy, 2014, p. 158). Located on the Alexander III Bridge, the installation (designed by Gabriel Guévrékian) was conceived as a creative space to display Delaunay's simultaneous fabrics, garments, and accessories and as a multi-functional space.

Fashion was omnipresent at the *Exposition Internationale des arts décoratifs et industriels modernes*, not only in the *Boutique Simultanée* or at the event organised by Paul Poiret, who docked three boats—*Amours*, *Délices*, and *Orgues*—on the banks of the Seine. These boats were designed as multi-functional spaces for entertainment, hosting guests and showcasing collections. However, fashion was also present in the actual exposition, with the “*Pavillon de l'élégance*” designed by Robert Fournez. With modern lines (which today we could call Art Deco), the pavilion invited visitors to immerse themselves in the world of luxury. The central space housed Cartier's high jewellery creations while surrounding areas recreated the environments of Parisian haute couture houses, such as those of the Callot sisters, Worth, and Lanvin. Within these spaces, with their grey and gold walls, designed with creations by Armand-Albert Rateau, accurate dioramas were created, reconstructing the “everyday” life of fashion houses with their presentations, fashion shows, and client fittings. To make these reconstructions as realistic as possible, mannequins made by Siéglé were modelled on typical poses of models during fashion shows (Guéné, 2007, p. 32).

Over time, the interaction between communication, fashion shows, and window displays intensified. In the 1950s, the window display became an integral part of a broader communication strategy, as evidenced by the fashion shows organised by *la Rinascente* in Italy. These shows, which were often held for charitable purposes and coincided with the arrival of new collections, were not just events for buyers but also opportunities for direct public engagement (Canella, 2017, pp. 265-266). The design of the invitations, entrusted to Max Huber, and the displays curated by Roberto Sambonet helped create an exclusivity and theatricality reflected in the window displays. Both static yet stylised windows and dynamic, theatrical fashion shows were forms of visual communication designed to astonish and engage the audience. Thus, the window had become an extension of the fashion show, where products were exhibited and narrated through a visual language that informed and entertained (Linfante, 2024).

2.3 The Window within a Communication System

Today, in a context characterised by digitalisation, the need for differentiation and maintaining connections with consumers is a top priority for retailers. The window display has

evolved not only as a physical space but as part of a complex communication system. Fashion collections are increasingly designed to offer a wide range of products and engage, entertain, and create expectations through diverse experiences over time and across spaces. The fashion show, advertising, in-store displays, and potential social media launches are all interconnected actions that develop along the life cycle of a collection.

The concept of experience has thus expanded: the event of a fashion show is no longer an isolated action but becomes the “pilot” of a series of events created to entertain both in person and through digital channels. It is not about replicating the same actions in different formats but building specific experiences for each moment and platform. A notable example of this evolution is the 2016 event organised by Valentino for the launch of *Zoolander II*, where the movie’s protagonists, Derek Zoolander (played by Ben Stiller) and Hansel (played by Owen Wilson), made an appearance at Valentino’s Autumn/Winter 2016 show, engaging in iconic poses. This event not only thrilled the audience present but was amplified by social media, creating a strong connection between the brand and its consumers. The event prompted the brand to incorporate Zoolander and Hansel into its window displays, transforming them into an interactive performance that generated significant media attention.

The shop window becomes a further performance stage, also in April 2024, when, during the Salone del Mobile, Plan C (the brand founded by Carolina Castiglioni in 2018) not only sets up the shop windows of the Banner store in Milan but uses them for a programme of live performances created by the artist Maria Chiara Venturini entitled “Unexpected Guest”. The shop windows were designed as installations that recreated domestic environments with videos and physical objects. These display windows/installations also became the set for live performances by the artist throughout the week of the Salone del Mobile, three times a day (at 12.00, 15.00 and 18.00). The artist would enter the display windows/apartments and interact with the objects in different ways and forms depending on the time of day. Passers-by thus had the opportunity to participate and, albeit through the frame of the shop window, interact with the artist and simultaneously become part of the performance.

These events are part of a broader logic in which the window display is no longer just a passive observation space but a place where consumers actively participate in the brand’s communication.

3. The Future of the Window Display: Smoother and More Personalised Connections

In recent years, Prada reinterpreted communication through its windows innovatively and engagingly, exemplifying the shift from traditional window displays to performative windows. The transition of the window display from its traditional role as a product showcase to an interactive, performative space took shape in one of the brand’s recent collaborations with American artist Miranda July, who in 2024 created a series of interactive window installations for the brand. These displays were spaces for showing new products

and proper interactive theatres where passers-by could actively participate in the narrative. The true innovation in this case lay in the fact that the windows themselves (open to the street) became an integral part of a more significant performance aimed at overturning traditional retail and communication practices, conceived as a modern “speaker’s corner”.

In a period where digitalisation has become overwhelming, the Italian brand is stepping back into a world that now appears solely focused on digitalisation, even when transmitting knowledge and experiences. The project with Miranda July for the advertising campaign titled *Now That We Are Here* for Prada’s Autumn/Winter 2024-2025 collection was conceived to explore new ways of conversing, physically staging the intimacy typical of personal phone calls. While in the campaign (communicated through traditional above-the-line media), models spoke through deliberately old-fashioned telephones, the windows of boutiques in Milan, London, Los Angeles, New York, and Bangkok came to life with Miranda July’s *Hotline* project, taking the imagined conversations of the campaign into the real world and the brand’s windows.

For this project, the windows opened to the street, inviting passers-by not just to see products or images on display but to enter the window and become part of an action that blended art and commerce. The public was invited to interact with the window, where a telephone was available for anyone willing to pick up the receiver and call the number displayed on Prada’s printed campaigns. Once the number was dialled, they could converse with Miranda July, a scripted version of the artist, personalised according to the responses given. This offered the chance to interact with a digital copy of the artist, whispering to the curious passer-by—a combination of irony, provocation, and everyday life in the form of friendly or more surreal advice that unfolded in various responses based on the user’s input.

This interactive approach transformed the window into a “black box”, where each visitor became the protagonist of a unique and personal narrative. In a world where consumers increasingly demand personalised experiences, Prada responded innovatively, offering an experience beyond mere aesthetics. The window, which had once been merely a showcase for products, became a storytelling space, placing the consumer’s imagination and personal experience at the centre of the encounter.

The choice of an artist like Miranda July was not incidental. Her artistic approach, characterised by emotional communication, perfectly aligned with Prada’s identity, a brand that has always sought to explore and challenge the conventions of fashion and visual communication.

4. Conclusions

The evolution of store windows marks a significant transformation in the retail landscape. Alongside communication advancements, the shop window’s function has shifted considerably, evolving from a mere display tool into an integral component of a complex, interactive, and performative communication system.

The developments highlighted in the case studies underscore this progression, illustrating how shop windows have transitioned from static physical spaces to dynamic platforms that foster involvement and interaction over time. Not only utilising new technologies, windows increasingly engage consumers in direct, physical, and immersive experiences. The shop window has thus become a site for participatory storytelling, where the consumer, through various forms of interaction, assumes different roles: from a curious observer (as in the case of Valentino) to a co-protagonist (as seen with Plan C), and ultimately to the central protagonist (as demonstrated by Prada).

In the project created in collaboration with Miranda July, Prada exemplifies how shop windows can transcend traditional display functions, transforming into spaces of active engagement. Every action becomes an opportunity for participation and connection, reinforcing the brand's identity. This shift not only diminishes the boundaries between the physical and digital realms but also enables the consumer to interact with the narrative in real time, creating a tangible experience enhanced through digital channels that amplify the brand's presence.

In this context, shop windows increasingly possess the potential to serve as reliable, two-way communication platforms. Consumers are no longer passive observers but integral participants in a broader narrative encompassing diverse aspects of everyday life, ranging from fashion and art to the digital and physical spheres. As the world becomes increasingly connected and digitalised, the shop window could emerge as a direct, interactive, and immersive touchpoint. It would adopt a transdisciplinary approach, offering a sensory interpretation of the brand's values through physical and virtual means. The consumer experience thus extends beyond mere shopping (Vannucci & Pantano, 2021, p. 2126), presenting an opportunity for active, creative participation—an actual performance of communication and brand identity. It becomes part of a broader cultural programme and a field of experimentation where various forms of media language intersect, bridging the domains of economy, culture, art, consumption, communication, marketing, fashion, and design (Fiorani, 2006, p. 43). In this sense, retail is poised to evolve from a space of consumption into a space of shared creation, where the consumer is no longer merely a spectator but an active co-creator of the experience (Iannilli, 2024).

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Vittorio Linfante is an art director, textile designer, and teacher in branding and communication at the Università di Bologna. He has also written several books and articles on the ties between fashion, art, and communication.



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The facade as communication tool between brand identity, localism and sustainability

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Abstract: This article explores the intersection of localism and sustainability in retail design, analyzing how a strong connection with the context can contribute to achieving a more sustainable approach. Through the analysis of case studies, the article will specifically focus on the design of retail spaces, highlighting best practices in which local aesthetics, languages, and materials are integrated and reinterpreted through the use of technology to foster a sustainable design approach. In a historical period where environmental awareness and the importance of local identities are increasingly recognized, it is essential to understand the opportunity for collaboration between designers and brands to create spaces that are not only aesthetically appealing but also deeply rooted in the local context and environmentally responsible.

Keywords: localism; sustainable technologies; facade; brand identity

1. Introduction

In recent years, the concept of localism has gained increasing attention in the field of retail design. With the rise of environmental awareness and the growing demand for sustainable business practices, designers and brands are reconsidering their approach, experimenting with best practices that view the local context as a design opportunity. This article explores how a strong relationship with the surrounding context can not only enhance the customer experience but also contribute to the development of more sustainable practices in the retail sector, turning local engagement into a valuable design opportunity.

2. Methodology

To select the case studies, an approach based on analyzing projects that integrate sustainability and localism strategies through technology and material choices was adopted. Three projects by MVRDV were selected for their reinterpretation of the local context through innovative solutions. However, the definition of localism remains open to debate, particularly when projects do not directly involve local designers or stakeholders. In this

research, localism is considered not only as the use of native materials but also as a strategy for engaging with local culture, while acknowledging the limitations of this approach in the analyzed contexts.

3. Localism and Sustainability

3.1 Localism: definition and fundamental principles

Localism, a theme that resurged significantly during the COVID-19 pandemic (Perera & Ranaweera, 2022), manifests across various disciplinary fields, including economics, commerce, urban planning, politics, and culture. It represents a response to the growing desire for authenticity and rootedness in an era marked by globalized flows and the erosion of territorial identities. The term *localism* has been defined by sociologist Ilvo Diamanti as a “polysemic concept, used in different contexts with varying meanings and emphases.” Localism is present when “the specificity of the local context serves as the foundation or reference point for identity and political claims.” This phenomenon occurs in two ways: “the territory is used either as an identity marker or as a reference for interests” (Diamanti, 1994).

Localism can thus be understood as an approach that emphasizes the importance of the local context over the global one, placing identity, resources, traditions, and the unique characteristics of a territory or community at its core (Fletcher, 2018). It promotes the value of the “local” and social equity (Perera & Ranaweera, 2022) as a counterbalance to the standardization and homogenization imposed by globalization. Among the various interpretations of localism, we can also consider *semantic localism*, which refers to the use of recognizable signs within a community to convey a shared message, an adaptation of a concept’s meaning according to its specific contextual framework.

3.2 Sustainability: key concepts and importance in retail

In the field of retail design, localism fosters greater community engagement, leading to sustainable development that establishes direct connections between consumers, producers, and the surrounding environment. This interplay positions localism as a fundamental principle of sustainability (Pepper, 1996).

The localist approach is fundamental to the sustainability of a territory, as the well-being of a community depends on the health of the ecosystem in which it resides and its unique geographical location, as these factors directly influence it (Fletcher, 2018). Within this framework, localism not only promotes a sustainable model but also redefines the relationship between territory, brand, and people. The growing emphasis on the local dimension has led to a redefinition of the role of retail spaces, which have evolved into true points of contact between brands and their surroundings - expressions of local culture and shared identity. As a result, the retail space is no longer merely a place for purchasing products but becomes an experiential and narrative environment where brands communicate their identity by adapting it to the location and audience they engage with. This is achieved through architectural, material, and formal choices that shape and redefine the brand’s language. This approach transforms retail into a semiotic phenomenon,

where every element - from product displays to storefronts, from colors to materials - contributes to constructing a cohesive and meaningful narrative for the consumer.

Today, the retail space does not merely offer products to the public; rather, it becomes a message in itself, a medium of communication, a social hub, and a magnetic place (Torres, 2000). *"The act of consumption in contemporary society is increasingly tied to the immaterial dimension underlying the vast majority of products available on the market. The immaterial component of an object defines its textual nature, its ability to embody meaning, and to communicate through various expressive forms. In this way, objects, before being consumer goods, appear as texts open to interpretation by consumers. From this perspective, it becomes evident that the issue of branding is intrinsically semiotic."* (Torres, 2000).

Products thus transform into signs, symbols, and communication tools, and the space they occupy within the semiotic universe is no less significant than their physical presence. J.M. Floch's (2001) approach highlights how semiotics aids in deciphering the physical representation of a brand, illustrating how its formal manifestation embodies the brand's value system. One of the most significant contributions of semiotics to the study of consumption is the identification of the dialectical relationship between the production and consumption of meaning in relation to brand identity. *"In this sense, semiotics pioneers the shift of attention towards a specific sphere of operational marketing known as 'brand imaging,' which takes shape at the point of sale through modern visual merchandising techniques - namely, the strategic presentation of a brand's products within a dedicated retail space."* (Baldassari, 2006).

The retail space becomes a medium for communicating brand identity through its location, shopping windows, interior layout, finishing materials, furnishings, and display elements. All these components contribute to conveying a unified message, as if the retail space were nothing more than a text in which the furniture and products constitute the grammar, while the architectural elements that establish relationships between them form the syntax. The brand's message must therefore be conveyed consistently, even when employing different media and communication languages. Once the brand's core values have been identified, it is essential to adapt them across various communication languages, ensuring both integration and relevance of the imagery while maintaining a coherent global identity.

"Identity enables the recognition of a continuity of form and content attributes beyond the differences observable in their manifestation. It presupposes the persistence of an invariant core that ensures the permanence of the object through its various phases." (Baldassari, 2006).

This invariant core represents the fundamental values of a company, the essence that guarantees continuity over time and across different domains. Engaging with diverse contexts requires brands to undergo a continuous process of adaptation, a fine-tuning operation in which the brand's foundational concepts are reinterpreted through a series of micro-adjustments. These subtle transformations allow the brand's core values to be refined and updated in response to the specific characteristics of each context.

4. The facade/shopping window as a value communication tool

Within this framework, retail facades and storefronts play a crucial role in shaping the relationship between brands and the city. They serve as a visual interface between a brand's identity and the urban and social context, functioning as true communication tools that tell a story, convey values, and evoke emotions in passersby. As Lipowicz-Budzyńska (2024) states, facades become *“an excellent medium to convey messages. Directed at the users and surroundings of the building, the messages can be used to build or strengthen social identity [...] the facade can be used as a medium to communicate content that supports achieving or improving social integration.”*

By engaging with their surroundings, integrating into the urban landscape, celebrating local events and seasonal changes, and fostering a connection between the brand and the community, facades and storefronts transform into a porous membrane where the city and brands interact. This dynamic relationship elevates retail spaces beyond mere commercial venues, turning them into cultural landmarks. At the intersection of localism and sustainability, brands implement various approaches to innovation (Dybdahl, 2019). Among these, technological experimentation, the use of sustainable materials, and the application of circular economy principles generate design, technological, and systemic solutions aimed at reducing environmental impact and optimizing resource use. The constant pursuit of balance between innovation and tradition challenges designers to explore new modes of expression through forms, materials, and techniques that define a novel design approach (Buravchenko, 2019; Kamali, 2024). This approach integrates three key domains:

1. **Culture:** Designing the building envelope while respecting collective memory and local specificity, transforming retail facades into urban landmarks that tell a story and reinforce a sense of place;
2. **Environment:** Developing adaptive solutions that respond to specific climatic conditions and sustainability requirements;
3. **Technology:** Utilizing and supporting advanced, tailor-made design tools.

By combining these three areas of intervention, facade design becomes an opportunity to establish a meaningful dialogue with the surrounding environment. Localism and sustainability intertwine, manifesting through:

- **Semantic references to cultural traditions:** Incorporating local motifs, textures, and colors, reinterpreted in a contemporary way;
- **Dialogue with the surrounding architecture:** Adapting to the urban or natural context in which the retail space is embedded, achieving seamless integration.

This approach ultimately supports the technological research of solutions that successfully merge tradition and innovation.

5. The role of technology in Localism and Sustainability in Retail facade design: three significant case studies

To exemplify the role of technology in the development of projects that link sustainability and localism, this research focuses specifically on three emblematic projects by the Dutch studio MVRDV. Founded in the Netherlands in 1993, the studio is renowned for its innovative design approach, which is centered on creating buildings and urban spaces that engage in dialogue with the local context. These designs respect the history and culture of a place, while reinterpreting them through a contemporary and experimental language. This approach is also evident in the studio's retail design projects, specifically analyzed here: Crystal Houses, Amsterdam (2016), Flagship Store Bulgari, Shanghai (2021), and Tiffany & Co., Singapore Changi Airport (2023).

5.1 Crystal Houses, Amsterdam

One outstanding example of how localism and sustainability may be incorporated into modern retail architecture is the MVRDV Crystal Houses project in Amsterdam (<https://www.mvrdv.com/projects/240/crystal-houses>). By fusing local architectural heritage with modernity and global expressiveness, the project seeks to reimagine cultural traditions while conversing with the urban surroundings.

The facade's main material, glass, was used to represent both innovation and history (Oikonomopoulou, 2016). While keeping a formal relationship with the neighborhood's ancient facades (see Figure 1), the use of glass bricks reinterprets the Dutch terracotta construction heritage. This strategy adds poetic originality while honoring the district's architectural style. As mandated by local laws, the glass bricks on the upper stories gradually give way to a classic terracotta facade, resulting in a dramatic transition that connects the past and future.

A critical aspect of the project concerns the demolition of the pre-existing building to make way for the new construction. This raises questions about the actual sustainability of the intervention: would a renovation of the original building have been a more sustainable solution?



Figure 1 The facade shows the fading of glass brick and its transition to traditional brick

While maintaining the proportions and architectural language of traditional structures, this material transition enables Crystal Houses to mix in seamlessly with the urban landscape. By preserving typical elements of the old structures, the facade promotes interaction with the nearby historic buildings.

MVRDV sought to recreate the original buildings through an extensive use of glass. To comply with new zoning restrictions and enhance interior space, the virtually full-glass facade is vertically stretched while maintaining the original design's brick layering and window frame elements. As required by the city, glass bricks go along the facade before gradually giving way to conventional terracotta bricks for the apartments as required by the city's aesthetics laws. The terracotta part appears to float above the shop floor because of this effect. The problem of preserving regional identity in increasingly globalized retail environments is tackled by Crystal Houses. Architectural diversity is at danger due to the growing homogeneity of upscale retail avenues. Crystal Houses creates a distinctive flagship shop by providing the required window surface for a modern store while maintaining architectural charm and uniqueness.

Winy Maas, an architect and co-founder of MVRDV, says, "We told the client, 'Let's bring back what will be demolished but develop it further.'" The proposal incorporates artistic creativity in glass building while maintaining respect for the surrounding structure. It

makes it possible for international brands to blend modernism with tradition and transparency with local identity, making it suitable in historic districts all over the world. The realization of this vision required extensive collaboration with multiple partners. Solid glass bricks were individually cast and crafted by Poesia in Resana, near Venice (see Figure 2).



Figure 2 Venetian artisans as they work with glass

Delft University of Technology created fabrication methods and structural solutions (see Figure 3) in collaboration with the engineering firm ABT and contractor Wessels Zeist. The bricks were bound together without the use of conventional mortar using a high-strength, transparent, UV-bonded glue made by Delo Industrial Adhesives in Germany.

Since all of the glass used in Crystal Houses is recyclable, sustainability is very important. The facade can be disassembled and reused at the end of the building's existence in accordance with the principles of the circular economy. This strategy is a perfect example of how sustainability and localism may coexist in a creative architectural endeavor. MVRDV has developed a paradigm of architecture as a bridge between tradition and modernity, local and global, past and future, by reinterpreting local materials, honoring historical surroundings, and placing a high priority on environmental sustainability.



Figure 3 Delo Industrial Adhesives workers applying the high-strength, UV-bonded clear glue

Furthermore, although the glass bricks are fully recyclable, it has emerged that the building requires significant cooling during the summer months due to the greenhouse effect generated by the transparent material. This leads us to reflect on how sustainability criteria should include not only material selection but also the long-term energy performance of the building.

5.2 Flagship store Bulgari, Shanghai

Another project by MVRDV, and a quintessential example of the fusion between localism, cultural identity, and sustainability, is the facade design for the Bulgari flagship store in Shanghai (<https://www.mvrdv.com/projects/697/bulgari-shanghai>). Inaugurated in 2021, the project is located on one of the city's most iconic and vibrant streets: Nanjing Road, renowned for its blend of tradition and modernity, as well as local and global influences, deeply rooted in Chinese culture. This duality is also reflected in the store's facade design, which draws its conceptual inspiration from Italy and the brand's historic store in Rome (Barandy, 2021). The iconic green marble window frames overlooking Via Condotti (Figure 4) served as the decorative motif that inspired Bulgari's new global visual identity.

In the case of the Shanghai flagship store, the profile of these openings becomes the graphic motif of layered panels that create a bright green pattern (see Figure 5), with brass detailing inspired by Art Deco - an important historical period for both Chinese culture and commerce, as well as for the brand, with its Déco collection. The facade assumes the appearance and materiality of precious jewelry, conceived to celebrate the connection between Italy and local tradition: the material used for the facade is a clear homage to jade (Scott-Clark & Levy, 2002), an ornamental stone deeply rooted in Chinese tradition. This intercultural encounter between East and West, alongside the tribute to Chinese culture, results in a uniquely complex design.



Figure 4 The green marble window frames of the historical Bulgari's boutique

The facade project demonstrates MVRDV's ability to integrate sustainable recycled materials, entirely based on a circular economy (Ali et al., 2013), into luxury retail stores. The architectural firm's goal is to create spaces that prioritize material recovery and recycling (European Commission, 2020). The facade design features green panels made of sintered glass derived from recycled bottles (Milan, 2025), processed in Germany by a company specializing in glass treatment. The use of recycled glass not only reduces the extraction of new resources but also lowers CO₂ emissions associated with the production of virgin materials. However, the glass comes from Germany, which raises questions about the concept of localism when materials have to be transported over long distances. This paradox highlights how sustainability in retail design should be evaluated comprehensively, considering both the origin of materials and their life cycle.

In MVRDV's experimental and technological design process, these panels originate from fragments of recycled green and clear bottles, which undergo a thermal treatment that alters their consistency without melting the material. Subsequently, the glass panels are molded into the required dimensions and thicknesses before being polished to achieve their characteristic translucent finish.



Figure 5 Art deco-inspired profiles of façade openings

As stated by Jacob van Rijs, co-founder of MVRDV, "The collaboration with Bulgari has led to fascinating material experiments: with the right treatment and attention to detail, discarded bottles that would otherwise be wasted can be transformed into a jewel for the city." These glass panels, characterized by a brilliant green hue with varying intensity, create a continuous decorative surface that transforms the spatial perception at night (see Figure 5). During the day, they provide freshness and brightness to the facade, while at night, the backlighting enhances the material's texture, and its irregularity evokes the nuances of jade.

Thanks to MVRDV's ability to balance innovation with respect for cultural heritage, the Bulgari flagship store facade seamlessly integrates into the urban fabric of Nanjing Road, reflecting its vibrancy and adapting to the city's dynamic rhythm. The street, which, as previously mentioned, celebrates the convergence of local and global influences, welcomes this new project with its explicit reference to Eastern culture. The homage to jade establishes an immediate connection with Chinese tradition, making the design recognizable and meaningful to the local population, who have positively received the project. Additionally, the reinterpretation of jade as a decorative motif draws inspiration from Chinese culture but without direct involvement of local designers or artisans, making the project more of an aesthetic operation rather than a pure example of localized retail.

The synergy between local identity, global aesthetics, and technological innovation has led to the creation of a project that clearly demonstrates continuity between Shanghai's historical heritage and Bulgari's visual language, enriching intercultural dialogue.



Figure 6 Bulgari's flagship store at night

These elements make MVRDV's facade a key example of localism applied to retail design: here, the conscious use and experimentation of waste materials, combined with a strong focus on local culture, create the perfect balance between aesthetics, sustainability, and the urban context. This case study highlights how design can serve as a bridge between tradition and modernity while simultaneously promoting responsible and environmentally respectful practices.

5.3 Tiffany & Co., Singapore's Changi Airport

Located within Singapore's Changi Airport and completed in 2023, the Tiffany & Co. store (<https://www.mvrdv.com/projects/879/tiffany-facade-singapore-changi>) features a facade (see Figure 7) that seeks to combine the brand's historical and distinctive identity with its commitment to sustainability, focusing on elements closely linked to the local context.



Figure 7 The 3D-printed screen of the facade

Drawing inspiration from Singapore's coral reef, the project pays homage to a natural element of the region while reinforcing its ecological message through a design that evokes the ocean's imagery and raises awareness of its protection. The organic and cellular motifs, along with the color palette transitioning gradually from Tiffany Blue® to a deep oceanic blue (see Figure 8), illustrate the brand's clear intention to establish a dialogue with the natural landscape and the cultural character of Singapore.

In fostering this dialogue, the MVRDV NEXT technology team developed a facade screen distinguished by its originality and use of sustainable and innovative materials. The close collaboration with the Dutch company Aectual enabled the refinement of this screen (https://blog.aectual.com/tiffany?utm_source.com), experimenting with techniques, materials, and thicknesses.

MVRDV's design choices encapsulate multiple objectives, including:

1. Reducing environmental impact by repurposing plastic materials such as recovered fishing nets, thereby not only creating a design inspired by the oceans but also contributing to their preservation by minimizing waste and transforming it into valuable resources with a positive impact on the ecosystem;
2. Innovating production through the use of 3D printing to fabricate the 50-millimeter-thick facade screen, significantly reducing material waste compared to traditional methods;

3. Experimenting with a chemical mixture developed using seawater, in collaboration with the Italian company BUROMILAN, to meet fire safety regulations required within the airport while reinforcing the project's sustainable approach.

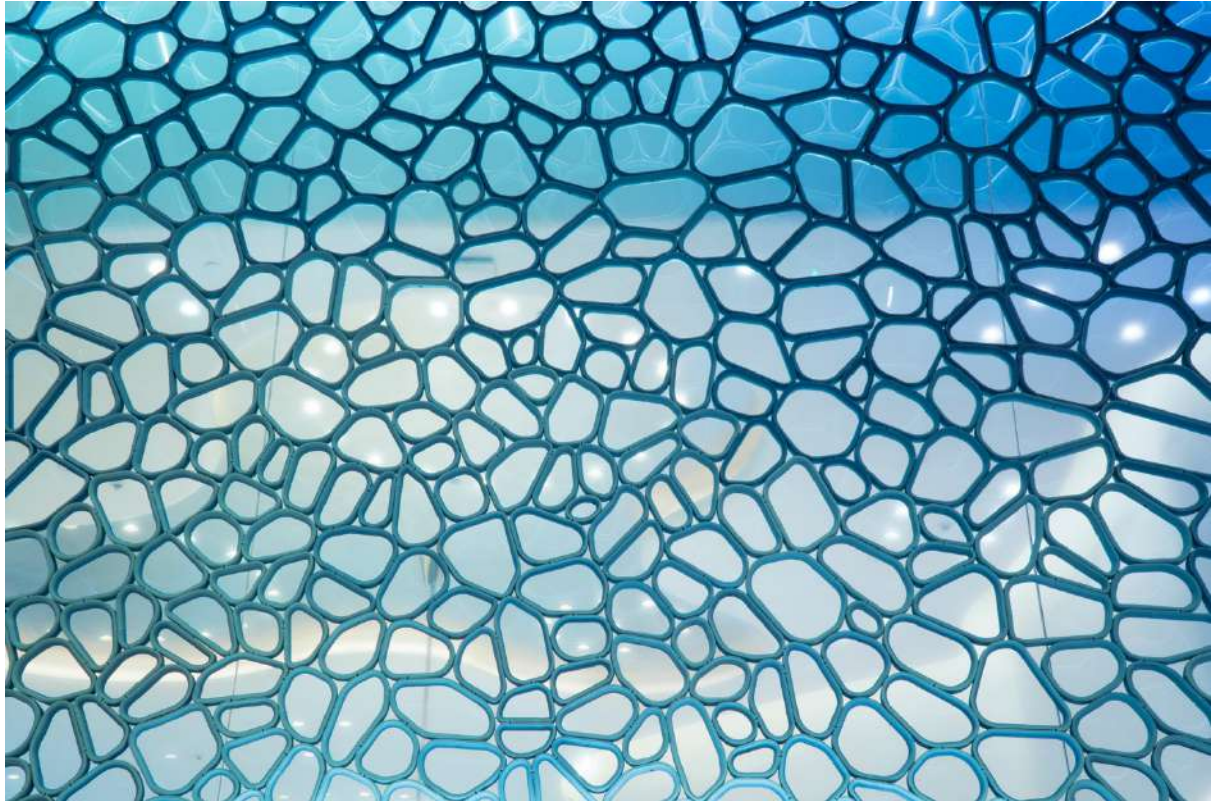


Figure 8 Detail of the decorative facade and gradual transition of blue

The design process developed for the Tiffany & Co. store reflects MVRDV's and the brand's concrete commitment to sustainability, actively incorporating it into construction choices and material applications. The organic and cellular coral-inspired design is not only a tribute to local nature but also a visual and symbolic experience aimed at establishing a strong connection with Singapore's cultural identity. Through this unique design and the architectural choices made, MVRDV's project underscores a commitment to environmental sustainability and the continuous pursuit of innovative solutions. From a cultural perspective, the Tiffany & Co. store serves as a manifesto for contemporary design and innovation celebrating the fusion of luxury branding with ecological responsibility, values that are increasingly central to modern consumers (Tolegenov et al., 2024), who are more attentive to sustainability, transparency, and product provenance (Mason et al., 2023). At the same time, the project conveys a clear message of environmental respect and the appreciation of local heritage.

MVRDV's design approach demonstrates how localism and sustainability can become essential tools for contemporary retail design, creating a project that integrates aesthetics, innovation, and environmental responsibility while setting new standards for design in the luxury and retail sectors. However, the reference to local culture remains predominantly symbolic. A key aspect to explore further is the actual involvement of the local community in the project: while the use of recycled plastic is a positive action, the value

of localized retail could be enhanced through collaborations with local environmental organizations or designers. This leads us to reflect on how an aesthetic interpretation of localism can be distinguished from direct community engagement in retail space design.

6. Conclusions

Based on the analysis conducted, we can firmly assert that the synergy between localism and sustainability in retail design represents a strategic opportunity for both brands and cities, fostering a renewed relationship between commercial spaces and the community. The role of the architectural envelope, particularly facades, emerges as a crucial tool for conveying brand values in a manner that aligns with the local context, promoting an authentic dialogue with the surrounding urban and natural environment. Using local materials, the integration of cultural traditions, and the adoption of innovative technologies, retail projects can create spaces that not only respect but also enrich the history and identity of a place. The analyzed case studies demonstrate how localism and sustainability can be interpreted in different ways in retail design. However, some critical issues emerge: the lack of direct involvement of local designers and artisans, the use of sustainable but not always locally sourced materials, and the absence of a real community impact in the urban contexts where these projects are located. An aspect that would deserve further exploration is the comparison with more participatory localized retail models, in which local communities are an integral part of the design process. The future challenge for luxury retail will be to balance technological innovation, sustainability, and authentic integration with the local context, to create commercial spaces that are not only aesthetically iconic but also socially and environmentally responsible.

The challenge, therefore, lies in balancing technological innovation with respect for culture and the environment, ensuring that sustainability is not merely an ecological objective but an intrinsic value of the design process. As demonstrated by the case studies analyzed, the interaction between these elements can transform a retail space into a cultural statement, creating meaningful experiences that strengthen the connection between localism and sustainability. This, in turn, contributes to a deeper awareness of our impact on the environment and local communities.

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Matching the Narrative Fragments and Customer Identity Fragments in Omni-Channel Fashion Retail

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Abstract: Omni-channel fashion retail integrates diverse channels and touchpoints, generating complex overlaps and combinations. In this dynamic environment, fashion brand narratives need to shift from selling products to selling experiences. This transformation challenges brands to maintain narrative coherence while adapting to distinct channel characteristics. Simultaneously, consumers exhibit varied identity expressions across channels, reflecting different consumption needs. However, existing narrative design approaches struggle to accommodate this fluidity. This study introduces a Narrative Design Alignment Framework, examining narrative fragments from the brand's perspective and identity fragments from the consumer's perspective. By mapping brand narratives and consumer identities across channels, the framework aligns these fragments to address the challenges of fragmented narrative design, offering a structured approach to integrating brand storytelling within omni-channel retail.

Keywords: Brand Narrative; Omni-Channel; Fashion Retail; Fragmented Narrative; Identity Fragmentation; Storytelling

1 Introduction

The rapid development of omnichannel fashion retail has dynamically integrated multiple channels (Iannilli & Spagnoli, 2023), including physical stores, e-commerce, social media, mobile applications and so on, thereby transforming the way fashion brands interact with consumers (Brynjolfsson et al., 2013; W. Gao et al., 2021). The overlap and seamless transition between channels enable consumers to engage with brands through multiple touchpoints, reshaping the complexity of the consumer shopping journey (Iannilli & Spagnoli, 2021). The following table outlines the key foundational concepts of omnichannel retailing.

This transformation necessitates a new brand retail framework that aligns both consistency and adaptability across omnichannel retail environments. In consumer behavior

studies, Identity is defined as any category label with which a consumer self-associates that is amenable to a clear picture of what a person in that category looks like, thinks, feels and does (Reed et al., 2012). Under the context of omnichannel retailing, fashion brands encounter a challenge: how to align their narrative with the fragmented identities that consumers adopt across different channels while maintaining narrative coherence and accommodating shifts in consumer identity.

Table 1 Key Foundational Concepts of Omnichannel Retailing

Concept	Examination
Marketing Channel	An array of exchange relationships that create customer value in the acquisition, consumption, and disposition of products and services (Pelton et al., 1997).
Omnichannel	It aims to link and coordinate all channels and touchpoints in an integrated way, eliminating the boundaries between channels and creating a seamless customer experience. (Barann et al., 2022; Beck & Rygl, 2015; Verhoef et al., 2015).
Touch point	A customer touchpoint is a Stimulus fulfilling a specific role within the customer journey. It consists of Stimulus, Interface, and Encounter (Barann et al., 2022).
Customer Journey	The customer journey is the process customers go through across multiple touchpoints to achieve a goal, such as a purchase or brand interaction (Lemon & Verhoef, 2016).
Customer Experience	Non-deliberate, spontaneous responses and reactions to particular stimuli, It influences customers' perceptions of quality, satisfaction, and value (Verhoef et al., 2015).

A customer may display enthusiastic fandom on TikTok Live, shift to impatience on Taobao, and adopt a pragmatic mindset in-store. These identity fragments—the diverse self-presentations consumers adopt in different contexts—underscore the need for brands to craft an adaptive and contextually responsive narrative design, one that resonates with the multifaceted nature of consumer identities across various touchpoints.

Despite the growing complexity of omnichannel retail (Frasquet-Deltoro et al., 2021), existing research lacks a systematic approach to guiding brands in constructing narratives across multiple channels (A. Both et al., 2022; W. Gao et al., 2021), while simultaneously addressing the fragmentation of consumer identities. The central research question of this study is: In the context of omnichannel fashion retail, how can a brand narrative framework be designed to align with the unique characteristics of different channels while accommodating the evolving multiplicity of consumer identities?

This study is grounded in four key areas of literature:

1. Theoretical Foundations of Narrative – Examining the core principles of narratology and its potential for further development.
2. Multi-Combination and Overlapping in OmniChannel Fashion Retail – Investigating how different retail channels interact and shape consumer behavior.
3. The Narrative of Fashion Retail in the OmniChannel Context – Analyzing the fragmentation of brand narratives under the influence of omnichannel retail.
4. The Multifaceted Identity Expressions of Fashion Consumers – Exploring how consumers present diverse identities across different retail channels.

To address the gaps in existing research, this study proposes the Narrative Design Alignment Framework, which systematically aligns brand narratives with consumer identity expressions. The alignment process ensures that the brand's narrative effectively adapts to the multifaceted nature of consumer identities across different channels. By introducing this framework, the study offers a theoretical and adaptable model, helping fashion brands enhance the coherence of their narratives and the effectiveness of consumer engagement. The findings provide valuable insights for brand management, enabling narratives to maintain both consistency and contextual adaptability within the fragmented omnichannel landscape.

2. Literature Review

2.1 Theoretical Foundations of Narrative

Narrative theory, or narratology, originated in the early stages of formalism and structuralism (Todorov, 1969). It is primarily composed of classical narrative theory and post-classical narrative theory (Onega & Landa, 2014). Classical narrative theory, which dominated during the 1960s, focuses on the internal structure of narratives. One of the most influential studies in this field is Propp's research on the fundamental units of narrative. He argued that the basic functional units of a narrative should be "functions," rather than roles or content (Propp, 1984).

Structuralist theorists such as Genette further refined these perspectives by examining the modes of narration, focusing on elements such as time, perspective, and narrative structure (Genette, 1988). Others, like Prince, differentiated between narration and story, highlighting their layered and dynamic nature, while Chatman introduced the distinction between story and discourse, providing a structural framework for understanding narrative composition (Chatman, 1978; Prince, 1987).

While classical narrative theory focused on structural analysis, post-classical approaches emerging after the 1980s challenged fixed models in favor of contextual and interpretive fluidity. Influenced by post-structuralist Barthes and his semiotic contributions (Barthes, 1968; Barthes & Duisit, 1975), post-classical narratology embraced cognitive and cultural perspectives. Fludernik redefined narrative as experiential reterritorialization, while Herman framed it as a cognitive tool (Fludernik, 2002; D. Herman, 1999). While Ryan emphasized the interactive relationship between text and reader, incorporating the reader's

role in shaping narrative meaning (Ryan, 1991), Phelan explored the rhetorical dimensions of narrative, considering how storytelling engages readers emotionally, intellectually, and ethically (Phelan, 1996). White, in turn, linked narrative to historiography and the shaping of historical understanding (White, 2014).

Narrative theory has evolved from a rigid formalist framework rooted in literary studies to a flexible, interpretive paradigm shaped by cultural, cognitive, and rhetorical dimensions, now applied across interdisciplinary contexts (Fludernik, 2002; D. Herman, 1999; L. Herman & Vervaeck, 2019). With the context of design studies (Bucchetti, 2014; Grimaldi et al., 2013; Hayama & Zurlo, 2024; Zurlo & Cautela, 2014), a number of scholars have defined and analysed narrative with respect to its definition and related fields. Grimaldi defines narrative in design as five layers, which involve layers and layers of narrative elements (Grimaldi et al., 2013). Based on this definition, the four pleasures (Jordan, 2000) were studied in conjunction with the narrative definition to explore subjective well-being constructed through narrative (Jordan et al., 2017). Some scholars have categorised design narratives into conceptual dimensions (Baule & Caratti, 2016; Bucchetti, 2014; Hayama & Zurlo, 2024; Trocchianesi, 2024; Zingale, 2022).

Based on prior research, Narrative could be defined as a structured, hierarchical, and dynamic system. It serves for individuals to make sense of the world and construct self-identity.

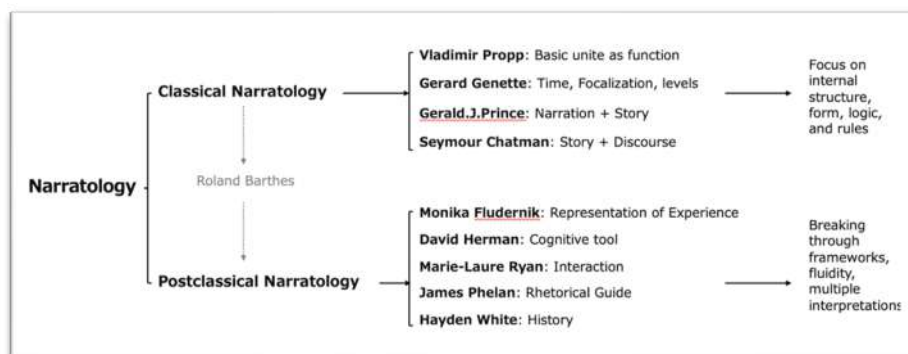


Figure 1 Literature Review of Theoretical Foundations of Narrative

2.2. Multi-Combination and Overlap in Omnichannel Fashion Retail

The purpose of omnichannel retail is to make the experiences more seamless between channels and create synergies for customers (Alexander & Kent, 2022; Asmare & Zewdie, 2022; Beck & Rygl, 2015; W. Gao et al., 2021; Iannilli & Spagnoli, 2023; Lemon & Verhoef, 2016), thereby increasing customer satisfaction (Hee et al., 2021; Ihtiyar, 2018). The interaction and overlap between channels create more space and possibilities for the experience economy (Jortberg, 2001).

Existing research primarily focuses on creating customer experience by using different channels and technologies (Alexander & Kent, 2022; Bonfanti et al., 2023; Ihtiyar, 2019; Riaz et al., 2022; Siregar & Kent, 2019). Other scholars have focused on factors influencing and constructing omnichannel retailing (Agatz et al., 2008; Asmare & Zewdie, 2022; Iannilli & Spagnoli, 2023; Mosquera et al., 2018; Ratchford et al., 2022; Riaz et al., 2022). There are

scholars exploring the relationship between consumer behavior and omni-channel fashion retail, highlighting its complexity and emphasizing the importance of channel switching at different stages (R. Gao & Yang, n.d.; Lynch & Barnes, 2020), while other studies have examined the relationship between consumer personality and the adoption of omni-channel fashion retail, emphasizing that understanding consumers enables the provision of seamless and personalized experiences (Ryu, 2019). Additionally, some articles underscore the challenges faced by retailers in coordinating and integrating the strengths of various channels, indicating that retailers need to interpret the behavioral differences of consumers across channels and develop targeted strategies accordingly (Aiolfi & Sabbadin, 2019; Shi, 2017).

In order to improve consumer satisfaction (Hee et al., 2021; Ihtiyar, 2018; Lazaris et al., 2021), omni-channel brands need to decipher the differences between consumers across channels (Aiolfi & Sabbadin, 2019; Shi, 2017), providing a personalized experience that switches seamlessly across channels (Aiolfi & Sabbadin, 2019; Ryu, 2019; Shi, 2017). In this case, the integration and articulation of channels in omnichannel fashion retailing highlight the challenges of managing multi-channel combinations and overlaps. This convergence compels brands to engage with a transformed narrative landscape and shifting consumer dynamics.

2.3 The Narrative of Fashion Retail Influenced by Omnichannel

Narrative is more than a way of telling a story, it is also a tool for making sense of the world, a way of constructing our selves and identities (Bruner, 2003). In the context of fashion retail narrative, retailers traditionally relied on factors such as geography and consumer perception to enhance their market influence. However, technology has now eliminated these barriers (Brynjolfsson et al., 2013). In the field of management, narrative theory has been introduced and used as a management medium (Mills & John, 2021), while brand stories are defined as structured accounts resembling classical fairy tales, offering responses to core questions such as who, what, why, where, when, how, and by what means (Lundqvist et al., 2013; Shankar et al., 2001; Twitchell, 2004). In relation to Brand Story, Brand Storytelling refers to the process or discourse of communicating a message through structured narrative (Aimé, 2023; Chatman, 1978).

The multi-combination and overlap of multiple channels in omnichannel retailing have brought about a substantial shift in brand narrative. Inside Omnichannel retailing, Touchpoints are critical to improving the customer's cognitive and emotional experience (Yin, 2024). Engaging and managing customers has become more complex with the proliferation of digital touchpoints, a complexity exacerbated by company-created content as part of the narrative, mixed with user-created content (Straker et al., 2015). The requirement for seamlessness also acts on the requirement for company and brand narrative design (A. Both et al., 2022; Sadler, 2022). Consumers become one of the key shapers and co-narrators of the meaning of retail brands (A. D. Both, 2024; Frow et al., 2015; Mager et al., 2022; Wetter-Edman et al., 2014). Besides, with the rapid development of media and online channels, narratives show fragmentation (Sadler, 2022). Seemingly disparate and independent narrative fragments are curated and combined into cohesive and complex narrative frameworks. Users on platforms like Twitter exhibit agency in connecting these

fragments (Sadler, 2021). Both conceptualized touchpoints as narrative fragments, examining how consumers switch between multiple channels and interpret brand narratives at these points of interaction (A. Both et al., 2022). Narratives fragmented in different channels make us re-think again about how we, as brands and as customers, recognise the world and how we construct ourselves (Bruner, 2003; Laurell, 2016). Through a review of existing literature, Fragmented Narrative could be defined as a term consists of non-linear, disjointed, and asynchronous narrative elements, which do not necessarily follow a sequential order or a clear causal structure but are instead linked by implicit connections, thematic associations, or audience interpretation. It goes across short-form video, web interfaces, and disjointed channels highlight a critical dimension of omnichannel retailing, yet remain underexplored in current research, leaving the narrative's potential largely untapped (A. D. Both, 2024).

2.4 The Multifaceted Identity Expressions of Fashion Consumers

Consumption is a culturally meaningful practice, and consumer goods carry meanings generated by the interaction between the world and the individual consumer (McCracken, 1986). This cultural significance changes in constant flux, and consumers are constantly constructing themselves from their interactions with commodity symbols and cultural worlds (McCracken, 1986). As 'cultural creatures' with 'social life', consumer fashion products are endowed with different meanings from production, consumption to disposal (Appadurai, 1988). This dynamic change in the connotation of goods, meeting consumers from different cultural worlds, carries different cultural and social meanings, and can influence the identities, emotions and relationships of individuals and groups (Kopytoff, 1986; Miller, 2008). Consumer purchases are strongly influenced by emotional connection and personal identity (Belk, 1988).

A consumer's Self-concept is an individual's perception of his or her own identity (Sirgy, 1982), including psychological trait, social identity, values and cultural background, as well as consumer satisfaction (Ashmore & Jussim, 1997; Schwartz & Halegoua, 2015; Sirgy, 1982). Consumers convey self-expression of identity, cultural identity, and social identity through their choice of objects, and it is one of the central parts of how we construct our social worlds (Appadurai, 1988; Belk, 1988; Kopytoff, 1986; McCracken, 1986; Miller, 2008). When a brand is highly aligned with consumer perceptions, it leads to more customer satisfaction for the brand (Sirgy, 1982). At the same time, as highly matched identity perceptions can affect consumer experience ratings (Schmitt, 1999), thereby affecting customer satisfaction. Thus, consumers' identity is closely related to their demand for goods (Belk, 1988; Sirgy, 1982), which also has a direct impact on customer satisfaction (Sirgy, 1982).

Design Research Focuses on Changes in Meaning, Driving Product Meaning Innovation (Norman & Verganti, 2014). Consumers are not completely constrained by social structures in their daily lives, reinterpreting meanings and using products through their own small-scale revolts against rules (Rendall, 1984).

This topic has been explored across multiple disciplines. In the field of fashion design, scholars have practised allowing consumers to collage pieces of identity into coherent

personal narratives through their own style of dress (Wilson, 2003). Fashion is an important tool in the construction of people's identities, and people adapt to society by fragmenting and displaying their multiple identities (Yuniya, 2005). Through the power of design, intervene in the dynamic flow of meaning between culturally constituted worlds, consumer goods, and individual consumers, to perform incremental innovation (McCracken, 1986; Norman & Verganti, 2014), to explore new meanings and values. Besides, some scholars have studied how young people should confront and manage their multiple identities on internet platforms (Deogracias, 2015). In sociology, Goffman proposed the role-playing theory, suggesting that individuals adjust their behavior according to the context and audience to demonstrate adaptability and flexibility, aligning with societal expectations placed upon them (Goffman, 1956). Meanwhile, Goffman proposed the Dramaturgical Theory, with front stage-back stage, arguing that individuals, much like actors, maintain a carefully curated front-stage persona in public or formal settings that aligns with societal expectations. Conversely, in private or informal settings, they adopt a more relaxed and uninhibited backstage persona (Goffman, 1956). Social psychology has also explored the concept of multiple identities. Some scholars have investigated the reasons and processes by which individuals construct their identities within social and situational contexts from a social psychological perspective (Howard, 2000; Mackie & Wright, 2003). In the field of education, some scholars have investigated the multiple identities of educators in response to the rapidly evolving internet channels. They concluded that each digital identity represents a core aspect of an educator's persona and emphasized the concept of "**Identity Fragments**" (Kimmons & Veletsianos, 2014). In the context of fashion, Wilson posits that consumers construct coherent personal narratives by assembling fragments of their identities through their clothing styles (Wilson, 2003). Yuniya asserts that fashion serves as a crucial tool for identity construction, enabling individuals to adapt to society by fragmentarily showcasing their multiple identities (Yuniya, 2005).

In these studies, we found that consumer identity is undergoing fragmentation (Deogracias, 2015; Goffman, 1956; Kimmons & Veletsianos, 2014; Sadler, 2022). This change in fragmentation is also happening in the narrative of omnichannel fashion retailing (A. Both et al., 2022; Sadler, 2022). And narratives shape brand meaning and help consumers connect emotionally with the brand (Escalas & Bettman, 2005). This is the part of the brand that consumers expect to recognise from the brand (Appadurai, 1988; Ashmore & Jussim, 1997, 1997; Escalas & Bettman, 2005; Howard, 2000). New connections between brand narratives and consumer identities have rarely been examined as a result of this fragmentation change.

3. Research Gap, Questions, and Methods

The preceding section illustrated the current state of omnichannel retailing in the fashion industry through a progressive analysis across four key domains. It indicates that current research predominantly focuses on holistic brand narratives, the design and impact of brand storytelling, and unchanging portrait of the consumer, while neglecting the evolu-

tion of fashion narrative design in the omnichannel context. Studies on fragmented narratives are rare, and the evolving fragmentation of brand narratives and consumer identities has not been sufficiently explored in terms of their interconnected dynamics, leaving a gap in understanding how these fragmented elements interact within omni-channel retail strategies.

This study **aims** to address the gap in existing research regarding omnichannel fashion retail narrative design within this complex context. It will provide a systematic and more precise set of narrative design framework to meet the rapidly evolving demands of channel and brand narrative design, thereby enriching the studies of fashion retail.

Therefore, the primary research question is:

- How can a fashion retail narrative framework be designed in the context of omnichannel fashion retail to align with the characteristics of customer Identity?

To address this issue, I conducted a comprehensive literature review to collect the primary academic research on omnichannel fashion retail narratives. This review revealed three key insights: the fragmented nature of brand narratives, the multiplicity of consumer identities, and their potential narrative-based interconnections. Additionally, the literature suggests that, within an omnichannel context, consumers actively participate in brand storytelling. Through diverse touchpoints across channels, consumers interact with brands while brands simultaneously deliver narratives via those same touchpoints. This bidirectional interaction forms a conceptual “bridge,” aligning the brand’s narrative construction with the consumer’s interpretive experience. Building upon this bridge metaphor, I visualized the function of “alignment” as a core component within my framework design. In response to the research gap, I adopted a conceptual research approach grounded in literature to propose a new narrative framework for retail: the Omni-Channel Brand Narrative and Customer Identity Matching Framework. To further enrich and operationalize this framework, I introduced complementary tools that support and elaborate the alignment mechanism embedded within the bridge structure.

4. Discussion

This framework aims to align and integrate fragmented brand narratives with fragmented consumer identities within an omni-channel context. Assuming that brand narrative design and consumer identity perception are the two core variables, retail strategists can analyze and investigate both, matching them across different channels and combinations to optimize consumer engagement. The fragmented brand narratives are shaped by variations in the brand's core storytelling and the characteristics of each channel, resulting in distinctive narrative fragments. Similarly, consumers' identity expressions also manifest differently across channels, reflecting diverse identity attributes in various retail environments.

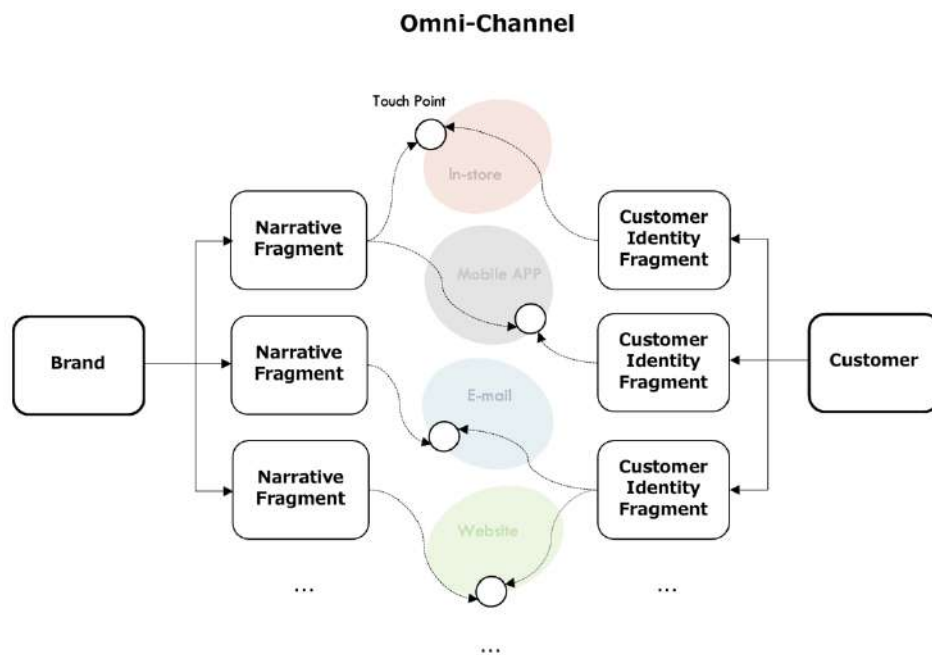


Figure 2 Omni-Channel Brand Narrative and Customer Identity Matching Framework

Incorporating Goffman's (1959) concepts of front stage and back stage into this study provides a framework for interpreting the diverse identities consumers adopt across different retail channels. The front stage represents identity fragments that emphasize a professional or socially curated image, particularly in retail environments that require consumers to engage in public social interactions. Conversely, the back stage encompasses identity fragments associated with a more relaxed, uninhibited self, allowing consumers to disengage from their front-stage roles. This distinction extends to retail channels that do not necessitate active consumer presence or identity maintenance (Goffman, 1956).

Integrating the Engel-Blackwell-Kollat (EBK) Model from consumer behavior theory, this model defines the consumer decision-making process as consisting of five major stages: 1. Problem Recognition; 2. Information Search – The consumer looks for information to solve the problem; 3. Alternative Evaluation; 4. Purchase Decision; 5. Post-Purchase Behavior (Katona, 1968). To align with consumer identity fragments and enhance the applicability of the framework, these five steps are consolidated into three key stages: Search, Purchase, Use and Evaluation. Each stage sequentially analyzes different identity fragments. To align with the different types of identity fragments present throughout the consumption process and to reflect the narrative characteristics of fashion brands, the selection of narrative fragments draws upon Grimaldi et al.'s Definitions of Narrative, which categorizes narratives into five levels (D1–D5) (Grimaldi et al., 2013). This paper adopts six components of the tool.

	Representation of events	Chronological	Characters	Causality or agency	Values and emotions	Conflicts and climax
D1	•					
D2	•	•	•			
D3	•	•	•	•		
D4	•	•	•	•	•	
D5	•	•	•	•	•	•

Figure 3 Inclusion of narrative elements in definitions (Grimaldi et al., 2013)

After integrating these theoretical frameworks, the Fashion Brand Fragmented Narrative Design Framework is established, as illustrated below. Within the overarching categories of front stage and back stage, the various retail channels utilized by brands are classified accordingly. Each channel is further mapped to the three key stages of the consumer journey: Search, Purchase, and Use & Evaluation. Each stage corresponds to specific consumer identity fragments and narrative fragments. The consumer identity fragments will be refined through further research, including case studies and qualitative interviews, aiming to identify key themes. Meanwhile, the narrative fragments are categorized based on Grimaldi et al.'s (2013) Definitions of Narrative, selecting from six components of narrative, each representing different degrees of narrative depth and complexity (Grimaldi et al., 2013). After analyzing all channels according to the framework described above, it becomes possible to observe which identity fragment–narrative fragment combinations exhibit greater similarity. Channels or stages that share a higher degree of similarity can then be linked, forming cohesive connections across the retail landscape. Such connections in retail design may enhance the potential for delivering a seamless omnichannel experience, aligning with the expectations of contemporary consumers.

This framework represents the key outcome of this study and serves as a foundational template for future case studies. In subsequent research, once a specific brand is identified, its various retail channels can be mapped onto this framework for further analysis, enabling a systematic examination of how brand narratives align with consumer identity fragments across different channels.

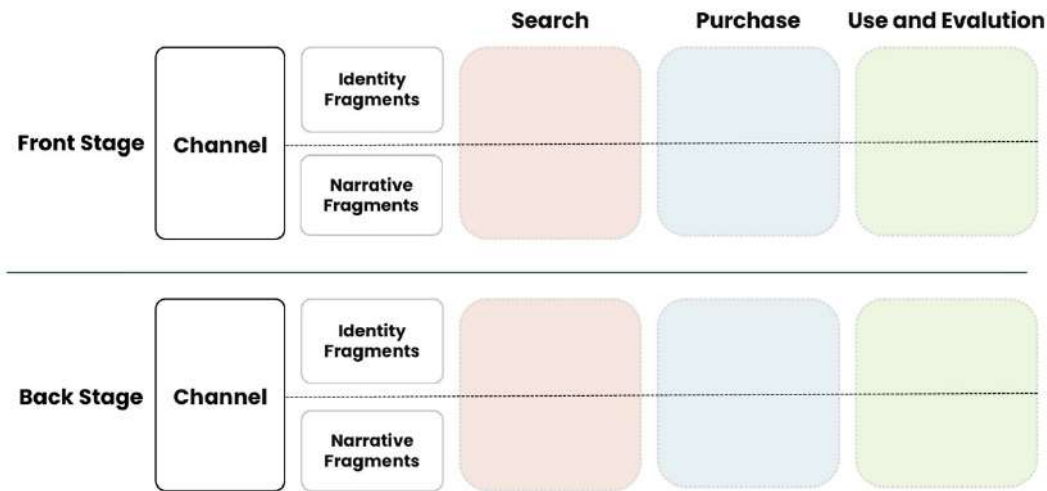
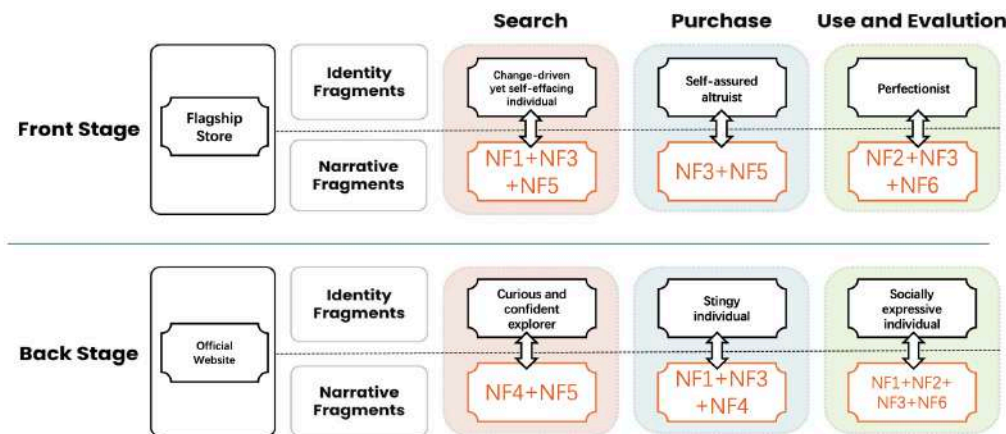


Figure 4 Fashion Brand Fragmented Narrative Design Framework

To better illustrate the application of the framework, this study constructs a hypothetical yoga apparel brand operating through two primary channels: a physical flagship store and an official website.

- **Step 1:** According to the structure of the framework, the flagship store is categorized as the front stage, while the official website is positioned as the back stage.
- **Step 2:** Conduct an investigation into consumer identity fragments. The brand's design team must carry out behavioral research on its customers—or those of comparable competitor brands—to identify the identity fragments that emerge during the stages of Search, Purchase, Use, and Evaluation across the two channels. A hypothetical set of identity fragments is used as an illustrative example.
- **Step 3:** Deconstruct the brand narrative into six structured fragments based on the following narratological components: Representation of Events, Chronological Structure, Characters, Causality and Agency, Values and Emotions, and Conflicts and Climax. These are labeled NF1 to NF6.
- **Step 4:** Each consumer identity fragment is then matched with the corresponding behavioral stage within each channel, in order to design optimal narrative pairings.

This framework ensures a stronger connection between brand and consumer while allowing for dynamic iteration. As consumer identities or channel configurations evolve, the brand can recalibrate its narrative fragments accordingly. Conversely, when the brand narrative is revised, this structure enables immediate identification of the narrative components that require adaptation within each channel.



Yoga Brand Narrative Fragments:

NF1 (Representation of events): The representation of yoga and yoga-related items within the brand.

NF2 (Chronological): From a self-doubting beginner to a multi-talented yoga powerhouse.

NF3 (Characters): A calm and caring friend, with the wisdom of a philosophical mentor

NF4 (Causality and agency): Comfort breeds consistency — the key to lasting joy in yoga.

NF5 (Values and emotions): Providing you with a breathing space on your body for inner dialogue.

NF6 (Conflicts and climax): Seamlessly shifting from the heat of life to a sanctuary of serenity.

Figure 5 Fashion Brand Fragmented Narrative Design Framework Example

5. Conclusions

This study has the potential to redefine the roles of existing retail channels by emphasizing precision marketing. Rather than providing uniform narrative content across all platforms, brands should tailor their messaging to align with the fragmented identities of target consumers within each specific channel.

By introducing the concept of fragmentation into the discourse on retail design, this research contributes to a new perspective on consumer-brand interaction across multiple touchpoints. However, at its current stage, the study remains within a theoretical framework and requires empirical validation by case studies.

Regarding future research directions, the introduction of consumer identity fragmentation challenges the traditional linear conceptualization of the customer journey, which assumes a sequential progression of consumer interactions across channels. The integration of fragmented narratives and identity-based consumer behaviors suggests that the customer journey may instead evolve dynamically, shifting in response to consumers' identity transformations across different platforms.

Furthermore, an important avenue for future exploration involves examining how brands can strategically guide consumers in developing brand-preferred identity fragments across various channels, ensuring a cohesive yet adaptive engagement experience.

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Jinze Lyu is a Ph.D. candidate at the Department of Design, Politecnico di Milano, and a member of the Retail Experience Research Lab. She holds an interdisciplinary academic background spanning Fashion Design, Design for the Fashion System, and Business Administration, which equips her with a comprehensive perspective on both creative and strategic dimensions of the fashion industry. Her research investigates narrative strategies and storytelling design within the context of omnichannel fashion retail. She is particularly interested in how the emergence of multiple channels has introduced increasing complexity to brand narratives, and how these narratives are integrated and adapted across different touchpoints in omnichannel systems.



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Fashion brand extension processes in hospitality

The Bulgari Hotels and Resorts case study and the sustainable design strategies for future development

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Abstract: The paper introduces design-led brand extension processes from the fashion system to the hospitality sector that are able to define hospitality branded spaces as part of a complex product-space-service system. The design process that guides the definition of the hospitality branded systems provides a systemic, multi-disciplinary, multi-media, multi-sensory and multi-scalar approach to these brand extension processes with the aim of maximizing brand extension potential. Analyzing the defining aspects of these processes, including through the Bulgari Hotels and Resorts case study, the paper explains how these processes impact both the interiors and the entire product system, access to services and related experiences. At the same time, the paper emphasizes the importance of developing sustainable design strategies and new cultural relationships between the fashion and hospitality sectors concretely implementing the environmental, economic, social and cultural sustainability of these processes for future developments. The paper highlights sustainable design strategies such as developing of sustainable oriented formats; spatial storytelling based on narrative coherence; design for longevity and timeless design; the value of adaptability, and guest involvement and awareness.

Keywords: brand extension; hospitality branded spaces; design driven processes; design for sustainability

1. Introduction

The present study explores brand extension processes from the fashion system to hospitality sector. Since the 1990s, and with increasing prevalence on a global scale since the 2000s, the governance of fashion and jewelry brands, particularly Italian luxury labels, has supported the strategic launch of brand extension processes (Dallabona, 2019; Carmi, 2017; Scullica & Cervetta, 2007) based on a category extension (Busacca et al., 2022).

This has involved the identification of new market categories and other physical spaces, beyond retail, where the brand can codify and express its creative and cultural vision: hospitality-branded spaces.

Hotels, resorts, restaurants, and even café, yacht clubs and marinas have become interesting experimental environments for international fashion and jewelry labels, strictly related to Italian culture, including Bulgari, Armani, Fendi, Moschino and Missoni, as well as those with a more diverse cultural background, such as the Spanish shoes brand Camper. These labels have developed immersive hospitality experiences that facilitate a direct and unique relationship between the brand and the customer, through emotion-driven interactions and multifaceted customer experience. Hospitality-branded spaces around the world have supported new tourism trends as a clear shift emerges from the consumption of single luxury product to complete tourism experiences. The focus is shifting from the product to the luxury service as part of an articulated experience that becomes an active practice, based not only on observation, but above all on emotions, memories and spatial paths (Atwal & Williams, 2009). Guests/consumers intend to live experiences 'immersed in the brand', perceiving and interacting on a multi-sensorial level with the augmented product (Kotler et al., 2012). In some cases, this leads to the definition of 'destination brand love', which can be defined by psychology of tourism as a particular and intense affective, emotional and cognitive bond that tourists/consumers establish with a destination, understood as the place and the whole system of spaces, products and services connected to it (Platania et al., 2020).

In addition, the brand extension processes have favored the establishment of new partnerships and co-branding operations between the new branded hotels and some brands in the Italian furniture contract sector (Pellegrino, 2024), which are able to realize customized products as well as to supply a significant amount of bespoke furniture guaranteeing quality in the details, reinforcing the creation of relationship systems between users and brands that materialize certain lifestyles in complex systems of spaces-products and services. Furthermore, international brands operating within the fragrance and beauty sector, including Acqua di Parma, Shiseido and Clarins, have undergone co-branding processes connected to amenities and merchandising production for hospitality-related spaces.

In contemporary times, characterized by rapid changes in markets and the consumption styles of diverse customer demographics, fashion brands should extend their area of interest to maintain relevance. In fashion system this evolution is evidenced by the frequent replacement of creative directors, each bringing a unique aesthetic language and distinct strategic approaches to brand management, but also in the research of new fields of expression and investments for brands.

Brand extension is a process that can result from a design-led strategic brand management model (Carmi, 2009). This involves spatial design as well as service design, which find in hospitality an area in which to put into practice design processes, hybridization and cross-fertilization processes that are also integrated with other disciplines, such as tourism and psychology, management and marketing. The intent is to foster the estab-

lishment of long-term practices aimed at enhancing the customer experience. A successful extension strategy will strengthen brand equity and help the brand gain prominence in the minds of consumers (Busacca et al., 2022). This allows to cultivate a close, preferably exclusive and enduring, relationship with the customer.

The design process that guides the definition of hospitality-branded systems, which are the result of an overlap between complex systems of spaces, products and services, tangible and intangible elements provide a systemic, multidisciplinary, multimedia, multisensory and multiscale approach to these brand extension processes with the aim to maximize the brand extension potential. The majority of fashion-branded hotels combine the narration and translation of the brand in a system, composed by physical spaces, immaterial elements and services, with the expression of Italian culture and the aspects of "Italianicity" that can be associated with the brand. Italianicity is 'a term coined by Barthes (1977: 48) to identify any element that could be considered, in different times and contexts, as Italian' (Dallabona, 2019). This term emphasizes the complexity and flexibility of Italian traits and suggests that those elements cannot be strictly codified but can evolve in time as the context changes. These traits are becoming fundamental in the economic, but also political, definition of Made in Italy, not only with reference to the production in Italy of consumer goods, but with a broader meaning that identifies unique characteristics in cultural approaches, craftsmanship, geographical territories as well as in some industrial districts related to special production chains and above all into what Andrea Branzi called 'environmental energy' (Branzi, 2006). This makes Made in Italy products highly recognized and appreciated, but also highly sought after in the countries of origin, after the products have been made known through tourist experiences in Italy or in places that express the Italian character.

1.1 Research methodology

The paper summarizes a desk research project that has been conducted since 2015 by the authors at the Department of Design, Politecnico di Milano. The initiation of the research was at the behest of a multinational enterprise operating within the luxury beauty sector, which had made a request for in-house training to be provided. The research project has examined the evolution of hospitality spaces associated with fashion and jewelry brands, analyzing the processes of brand extension, cross-fertilization and hybridization driven by design. The objective of the study was to provide a comprehensive overview of the relationship between the fashion system and the hospitality industry, with a focus on operators in the luxury sector who are tasked with designing new products and experiences in relation to the numerous brands belonging to the multinational group.

Methodologically, the research was structured in an initial investigation aimed at understanding the phenomena and describing a system of strategies applied to the hospitality sector. The activities were organized into the following research phases:

- the mapping of international fashion and jewelry brands that have initiated relations with the hospitality industry (from 90s). Italian luxury brands emerged as the most interesting cluster to be analyzed.

- The analysis of design-led processes (brand extension, co-branding, cross-fertilisation and hybridization processes) that have repercussions in the hospitality industry (branded hotels, setting up of a single branded suite, co-branding of specific spaces or services, such as beauty experiences, set-up of temporary spaces).
- The understanding of how brand extension is realized, also by means of literature reviews that made it possible to identify how the field of brand extension was initially explored with more depth in other disciplines (management and marketing, tourism sciences). This phase integrated the interview of sector experts and stakeholders and the analysis of significant case studies.
- The identification of invariant processes and approaches in relation to the case studies, such as time-based design processes and the relationship with different dimensional project scales, the systemic design approach considering the value of a multisensory involvement through spaces but also experiences, and above all the involvement of the guest so that a sense of belonging to the brand is stimulated.

This research enabled us to comprehend how brand extension processes influenced interiors, products, services and related experiences in the hospitality field. In addition, the research identified selected Italian luxury brands as paradigmatic case studies for design-led brand extension processes.

When the first research activity came to an end, it was decided to proceed with the constant monitoring of the relationship between hospitality and fashion systems, with specific focus on Italian luxury labels, because of the many possible implications with design. This made it possible to study the evolution of certain processes in hospitality industry and understand critical aspects and strengths. One of the interesting findings that has emerged during this long monitoring period is the need to implement these processes with sustainability strategies, some of which are already being explored by Design for Sustainability, in order to make the hospitality sector as well as the fashion sector concretely more sustainable.

The outcomes of these research endeavors primarily encompassed the dissemination of knowledge (Scullica & Elgani, 2015; 2017), manifested in the form of lectures designed to enhance the professional training of designers and to promote educational outreach. These efforts were undertaken to further advance the research program.

The ongoing monitoring has shown how a phenomenon that was initially very promising is going through periods of increase in brand extension operations and periods of reduction. Some operations, such as those initiated by Missoni and Moschino, have culminated in the closure of hotels, while others, including hospitality projects by Bulgari, Fendi and Armani, persist or demonstrate growth. These transformations appear to be more closely associated with the evolution of fashion brands and consumer behaviors, particularly in the context of a shifting economic and geopolitical environment, rather than a fundamental transformation within the hospitality industry itself. Nevertheless, the interplay be-

tween these domains remains a subject of interest, as evidenced by the hospitality sector's current embrace of new brand extension initiatives or analogous processes (Tovisi, 2024). This underscores the necessity for ongoing study and support of these processes through design. In this context, Bulgari Hotels & Resorts emerge as the most pertinent case study, given their nine hotel and resort openings since 2004. These establishments exemplify a virtuous and continuous process of brand extension from the fashion system to the hospitality field, thereby imprinting Bulgari's ethos on an intimate collection of hotels.

2. Hospitality as a privileged field for brand extension processes

Hospitality spaces offer a privileged vantage point from which to observe the relationship between fashion and jewelry brands and their customers, to be interpreted from a design perspective, considering various factors, including consumer brand engagement, changes in the retail environment and hybridization and cross-fertilization processes for future multidisciplinary developments.

Over the past twenty years, luxury fashion flagship hotels have played a pivotal role in strengthening brand representation, which is typically achieved through runway collections, advertising campaigns, both online and offline, and retail spaces, both single-brand focused and within concept stores. Hotels have been instrumental in identifying new channels for interaction with guest/customers, operating outside the conventional sales logic and delving into more liminal, relational, emotional and inspirational domains. This shift has led to a paradigm shift in the customer experience, where guests are no longer passive observers, but active participants in the experience.

Hotels should continuously and consistently embody the original and authentic essence of brands, without being assimilated into other commercial spaces. Consequently, the design strategies and practices of translating a brand vision into a system of physical spaces and services, as well as the aesthetic language adopted, can vary significantly between retail and hospitality spaces. This is done in order to promote customer experiential engagement and client community building. The processes that focus on the relationship between customer-hospitality experiences, services and the related spaces represent a significant field of experimentation for design. Design is therefore called upon to define a strategic approach to fashion branding and to relate to other disciplines, such as marketing and management, in order to achieve a coherent hospitality project.

In this sense, the Bulgari Hotels and Resorts are a significant case study that over time has demonstrated how a design-driven brand extension process can give rise to a collection of hotels and resorts spread all over the world with great affluence and communicative impact. The project, which has been in development since 2005 with continuity by the Italian architectural and design firms ACPV Antonio Citterio - Patricia Viels studio has involved the opening of nine hotels in urban contexts, such as Milan, London, Dubai, Shanghai, Beijing, Paris, Tokyo and Rome, and extra-urban context such as Bali. New openings in the Maldives, Turkey and the USA are planned in the coming years. On the

one hand, the brand extension process has been managed by a single major architectural firm to ensure coherence and harmony between all the projects, and on the other hand, the Marriott Group has the operational management of all the facilities, through a licensing operation, to guarantee the high-quality standards of the services provided.

The characteristic aspects that encode this Italian jewelry brand, such as the contemporary interpretation of Italian classicism, the sense of elegance, the close connection with Roman heritage, the exaltation of craftsmanship and the attention to detail, particularly in the working of colored precious stones, have allowed the transcription of languages and forms, typical of Italian culture and the brand's gold production, into a system of aesthetic languages, finishes and objects that constantly evoke the brand through the interior design without overtly copying its forms and languages. Silvio Ursini, Executive Vice President of Bulgari and Head of Bulgari's Hotels & Resorts division said: 'We have never thought of a large chain, but always of a collection of hotels with excellent service, recognizable design and authentic, starred Italian cuisine, starting from locations that are extraordinary in terms of address, building and physical space' (Incorvati, 2024). The hotel spaces are therefore conceived as an extension of the brand, able to continue that process of storytelling and engagement through brand values.

2.1 The 'total design' of the Parco dei Principi hotel

In hospitality, the systemic, multidisciplinary, multisensory and multiscale approach driven by design finds a relevant reference in the design approach based on Italian design culture. The Hotel Parco dei Principi designed by Gio Ponti in the 60s on the Sorrento coast (Italy) constitutes an archetype of the way of approaching this type of process that today finds fulfilment in the Bulgari Hotels design process held by ACPV. In fact, Gio Ponti was the first designer to define an integrated and total project. Ponti designed the concept (*ante litteram*) of the hotel starting from the characteristics of the location: the blue of the sea and the light blue of the sky in different shades, distant blue outlines on the horizon, of Capri, Ischia, Procida, the presence of Vesuvio, the white representing brightness and sun, the relationship with the green natural context (Ponti, 1964). The architect designed everything down to the last detail, as he explained in the pages of Domus magazine (Ponti, 1964). He related transversally with the architectural dimension, the interiors, the furnishing products as well as complements, including fabrics, lighting and tableware. Local materials such as ceramics were explored and designed by integrating the design process with collaborations with artists, such as Fausto Melotti, and design firms, such as Ceramica D'Agostino for customized tiles, to define immersive experiences in fully designed scenarios. Ponti anticipated the design approach that aims to govern the complexity of articulated and complex spaces that host numerous functions and services, such as hotels, by combining it with the reasoned enhancement of each individual aspect that can be designed through a coherent process.

2.2 Time based experiences and spaces

The duration of time spent in a hospitality space, which can be closely linked to an interaction with the brand, is one of the determining factors driving brands to invest in market segments initially not directly related to the fashion industry. Indeed, if the sales experience within a boutique succeeds in capturing a person's attention and entertaining them

within the space for a few times (dwell time), the experience of relating with the brand within a hospitable space is much longer (from few hours to one day, at least) and is comprised of a series of micro-experiences. These experiences are programmed to flexibly align with customers' personal schedules and are designed to strengthen the relationship between the consumer and the brand identity by offering services that allow guests to immerse themselves in out-of-the-ordinary atmospheres. This is achieved through a product-space-service system, including collective indoor and outdoor spaces (e.g. lobbies, lounges, restaurants, spas, gardens), as well as private spaces dedicated to self-care, rest and relaxation (e.g. rooms and suites). The provision of refreshment, self-care, wellness and leisure services is characterized by a precise character of uniqueness and exclusivity, marked by the novelty of the services provided. These services are accompanied by precise rituals and gestures, expressed by the behaviors of the staff, which load customary gestures with new meanings and values. The time-based configuration of experiences and the spaces in which they are situated represents a sophisticated aspect, given the multitude of actors, guest and staff, involved in relation to the complex system of spaces and services. The precise and continuous profiling of users through marketing tools enables the anticipation of guest expectations and needs, facilitating the design of experiences and spaces that are tailored to user requirements.

Considering Bulgari, the quality of the experience within the SPA and all related services accessible in the first hotel in Milan has been so recognized by all guests that the wellness spaces have become a strong point and important element of recognition of all Bulgari hotels. The brand has thus designed an increasingly strong image around the wellness spaces, not least because the concept of the SPA can be historically traced back to the Roman character from which is intrinsic to the soul of Bulgari. Inspired by the concept of ancient Roman baths, the brand builds a connection with one of the elements that characterize its identity: timeless classical elegance. This aspect, however, is connected with a very deep-rooted contemporary trend in the luxury segment such as extreme care for one's body and personal image.

Additionally, it is important to note that the design and execution times for hotels are typically more protracted than in the retail sector, which utilizes temporary spaces, pop-up retail and phygital experiences, all of which can undergo rapid evolution in response to the decisions of art directors and succession of collections, as well to the rapid evolution of trends and customer behaviors. While hotels can offer flexible spatial solutions due to their functional complexity, but the design process takes years from concept to opening. Moreover, hotels are subject to soft refurbishment every 5-7 years (the renovation cycle is shorter for food and beverage areas) and complete fit-out every 10 -15 years (Perkins&Will, 2021). This timing also has significant consequences regarding the sustainability and environmental impact of these design processes and requires design thinking to make these operations more sustainable in practice. Therefore, the design of hospitality spaces must be able to foresee and anticipate possible changes in tastes and needs at the time of the development concept and introduce styling and executive processes to update the interiors without shocking interventions with significant environmental impact.

2.3 Systemic approach in the multisensory dimension

Despite the digitization of shopping experiences and the concomitant accessibility of phygital experiences, hotels, alongside stores, continue to function as touchpoints with customers, physical environments conducive to the experimentation and implementation of design strategies, primarily due to their inherent compatibility with integrated project initiatives.

The project team, that includes professionals with strategic skills in marketing, management, design and communication, is called to consider and integrate through a systemic approach the brand philosophy and visions with cultural background. In luxury fashion flagship hotels is frequently based on the sense of 'Italianicity'. Concurrently, the design team must consider a specific characteristic of a geographical context, and local aspects of uniqueness related to traditions and craftsmanship. These elements can be material or immaterial, including cultural tradition and rituals, perfumes, local foods and flowers, atmospheres and color palettes. However, it is important to recognize that all of these elements contribute to a multi-sensory involvement of the guest through highly articulated and complex synesthetic experiences. Culinary experiences, where guests can taste local dishes prepared using traditional recipes or observe local people teaching guests to prepare dishes using local ingredients, are a prime example of this sensory involvement. The opportunity to discover local fragrances through the bespoke room fragrances designed for each hotel or through bespoke wellness experiences also plays a significant role in this sensory experience. Furthermore, guests can discover local music or cultural aspects through events and activities organized by the hotel, which are able to balance elements of local culture with an international welcoming character that characterizes these hotels. It is evident that the hotel places significant emphasis on respecting cultural and religious diversity, ensuring that every service caters to the needs of guests from diverse backgrounds.

During the development process, identitarian elements can be integrated into the conceptual aspects of brand translation, such as concept development and storytelling, and for meaningful experiences, such as guest journey design in relation to services planning, brand communication aspects, staff behaviors. Finally, the intangible aspects must find a tangible expression in a system of material aspects, based on executive processes, such as space plan, interior and product design, decoration, brand identity, wayfinding maps, online and off-line communication. The coordination and integration of these individual elements has the potential to yield innovative spaces and unique experiences for customers/guests.

All these components are very evident in the Bulgari Hotels projects which, while sharing the initial concept based on 'Romanicity', on the connection with historical symbols and cultural elements of the city of Rome and on the celebration of the Dolce Vita period, a historical period in which the brand became very well known, as well as a cultural period of Italian history that is highly appreciated all over the world, differ from each other in a significant enhancement of the local context in which they are rooted.

Among the elements that ACPV studio, in partnership with Bulgari, has recognized as the identity of the brand are iconic elements of 'Italianicity', and even more so of 'Romanicity'

such as tangible elements like the eight-pointed star, the symbol of the brand inspired by Campidoglio Square in Rome, the snakes, inspired by the jewels of ancient Rome, the patterns translated from the rich floors of the Pantheon and the Baths of Caracalla, that can be discovered in the city of Rome, as well as the ritual of Italian caffè that materializes in typical Italian bars and restaurants and the profound relationship of Italian culture with recipes made with typical Mediterranean products (Figure 1 and 2).

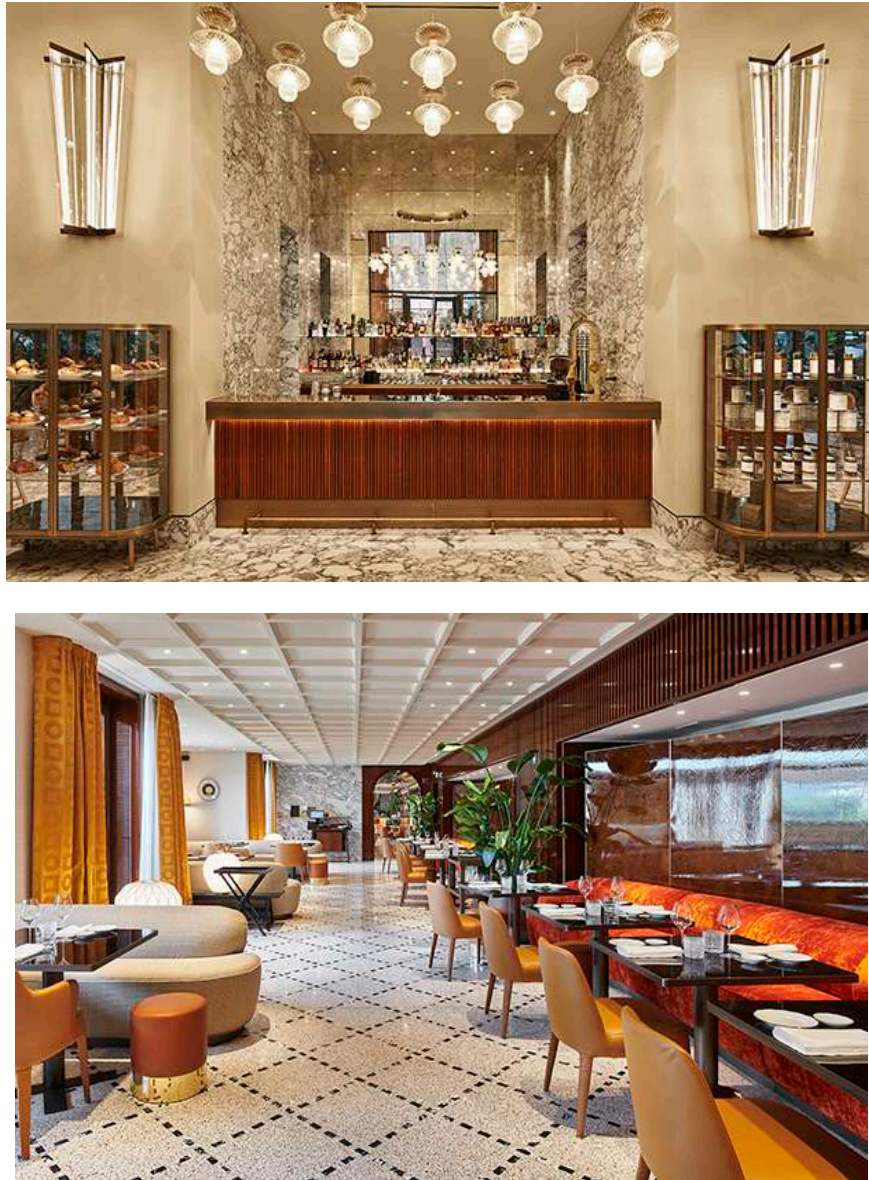


Figure 1 and Figure 2. Bulgari Hotel Rome, view of the café and restaurant. Fig. 1 shows the citation of traditional Italian cafés. Fig. 2 shows the revival of Italian cultural elements translated into decorative patterns, such as the mosaic flooring textures and the revival of Bulgari motifs and colours used for the curtains (Courtesy of ACPV – Bulgari Hotels and Resorts).

For each new hotel opening to these iconic tangible and intangible elements the ACPV studio has integrated characteristic aspects related to the history of the location. Starting with meticulous research into craftsmanship, traditional culture and in the Italian cuisine and wine tradition unique links were created between local context and brand. The meticulous processing of textiles and wallpapers in the hotel in Tokyo exemplifies the application of traditional Japanese techniques, mixed with Bulgari inspired patterns, with the workmanship of traditional kimonos being reproduced with great attention to detail (Figure 3). Similarly, the use of the hand-crafting of glass to make the screens in the SPA in Rome, using a Bulgari batter that originated in ancient Rome (Figure 4 and 5), as well as the use of the straw marquetry technique in the hotel in Paris showcases a sophisticated application of artisanal techniques, with the interiors, products and decorations being crafted to evoke the extreme manual craftsmanship of Bulgari's master goldsmiths. These elements are further enhanced by a subtle reference to some of the brand's iconic elements, such as candelabras that metamorphose into lampshades, brooches that transition into patterns, and jewelry that transforms into mosaics. At the same time, Bulgari has also traced iconic elements of 'Italianicity' in the design of the experience. Since 2017, chef Niko Romito has been involved in the creation of the restaurant Il Ristorante - Niko Romito, where it is possible to taste recipes of contemporary Italian cuisine that are meant to be true and authentic, so that those who dine at this restaurant within the hotel, in China, Dubai or anywhere else in the world, will feel as if they have visited Italy (Figure 6).



Figure 3 Bulgari Hotel Tokyo. In the master bedroom of the suite, one can see the application of traditional Japanese techniques in the realization of the headboard wall (Courtesy of ACPV – Bulgari Hotels and Resorts).



Figure 4 and Figure 5 Bulgari Hotel Rome. The diaphragm that screens light and view in the spa is made by handcrafting coloured glass replicating a Roman-inspired Bulgari pattern. (Courtesy of ACPV – Bulgari Hotels and Resorts).



Figure 6 Bulgari Hotel Tokyo. Each restaurant Il Ristorante - Niko Romito showcases the fusion of the Italian approach to cuisine and the local culture, not only in the creation of the dishes, but also in the design of the interior and the mise en place (Courtesy of ACPV – Bulgari Hotels and Resorts).

2.4 Multiscale Dimension

Hospitality spaces are point of interaction between different scales of the project, starting from the architectural aspects which affect the building through the structural components and the layout design to the definition of all details at the scale of the interior and furniture, right down to the coordinated and coherent selection of textiles, staff clothing, tableware, decorative objects, elements of art and amenities. A strategic and systemic design approach integrates architectural aspects to the definition and customization of interiors, considering different types of spaces and equipment, from the front of the house, understood as the system of shared and private spaces, to the back of the house, understood as the set of functional spaces that allow the functioning of technological systems and the provision of all services.

Interiors must relate to a system of furniture, products, objects as well as communicative and decorative elements, which are increasingly important for interior design. Proper design of all these areas is fundamental in the reuse of existing buildings and refurbishment into accommodation facilities, as well as in fit-out processes because the project must consider important executive aspects related to contract production: FF&E, furniture, fixture, (and also finishes) & equipment design, as well as OS&E (operating supplies & equipment). The expression FF&E refers to the design of a set of furniture, fixtures and equipment that enables a brand's vision to be expressed and realized in tangible aspects. The OS&E is related to products that are normally 'customised' with the operator's logo (such as bed linen, towels, bathrobes, uniforms, catering items, gym equipment and room hygiene supplies). These aspects should be guided, even if this is not entirely the case today, by a sustainable design approach to material selection and the arrangement of all materials, as well as an exploration of aesthetic languages, through the involvement of craftsmen using traditional techniques and unique workmanship. There is still a need and urgency to apply new strategies derived from design for sustainability to concretely reduce the environmental impact of these processes. The aim of the outcome is characterized by a 'unifying aesthetic language coupled with a communicative value of the interior spaces' (Scullica & Cervetta, 2007) that facilitates connections with a luxury-related tourist-accommodation system on a global scale. From the design point of view, the ACPV studio continues the total approach to design already expressed by Gio Ponti. In fact, the studio follows the project at all stages and scales, considering all the details from the concept definition to the detailed drawing of each individual element. From the architectural definition of the building to the design of the interiors, constantly collaborating with the *maison* in the search for unique and non-basic references that enhance the brand's history and sense of place (Figure 8). A significant example of this is the choice of the Mount Fuji brooch, made in 1971 by Bulgari in gold and platinum with mother-of-pearl, polychrome enamels and diamonds, as the emblem of the Bulgari Hotel Tokyo, in a continuous construction of connections between brand history, jewelry culture storytelling and relationship with local contexts.

2.5 Belonging vs appearing

A very delicate but salient aspect is the definition of a direct connection with the user, which passes through the identification of the user with the brand (Customer Brand Identification), the sharing of values and the absorption of the lifestyle suggested by a complex system such as in the hospitality product-service systems.

Guest and brand are connected if the brand is able to stimulate a sense of belonging, able to overcome appearances, the succession of trends, the evolutions of consumption styles and to influence behaviors and consumption. As affirmed by Platania 'tourists/consumers in fact often use purchasing and consumption as a process to create their social identity and define their self (Rather & Camilleri, 2019; Eastman & Eastman, 2015)' (Platania et al., 2020).

The practice of encouraging guests to identify themselves using an object system and an aesthetic codification is well-established. This is confirmed using products and objects

designed by renowned designer and artists, as well as iconic pieces, especially from Italian design. These objects are complemented by evocative images, works of art, symbolism, and recurring shapes, as well as materials and finishes inspired by specific historical periods. Moreover, these elements are complemented by experiences and rituals, such as those related to food and wellness, inspired by the culture of the place and the characteristic aspects of the brand. These tangible and intangible elements collectively suggest behaviors, modes of dress, culinary practices, and social interactions. This approach fosters guest loyalty while offering places and buildings a novel interpretation, evoking the memory of a significant past.

This process makes it possible to define spaces that, in turn, become iconic because they bear witness to a certain lifestyle, crystallizing certain aesthetic languages and ways of life, as in the case of the Bulgari Hotels. This process of transmitting the very essence of the brand is evident through a continuous suggestion of cultural elements linked to Italy, which influences the guests' behaviors, such as the relationship with food and the cult of cooking, and beauty evoked by images of famous Italian actresses wearing Bulgari jewelry, and which help the guest to dream and identify with it. The process is reinforced by co-branding operations between the jewelry brand and some furniture brands such as Maxalto, B&B, Flexform and Flos (Pellegrino, 2024). The role of the ACPV studio was fundamental, not only in terms of ensuring the coherence of all the elements, but also from a strategic business and management point of view, as it enabled the link between the companies for which Antonio Citterio was art director and designer, and the Bulgari world, through the creation of bespoke furniture or the customization of furniture from the collection.

The experiential dimension in a physical space, with connections to the virtual one, especially to social networks, which fully involves the customer as he and she sleeps, eats and relaxes within the hotel structure, remains central because it determines the identification of the user with the brand. Moreover, other strategies can be deployed to involve the guest, in Rome the Bulgari Foundation through a 'give back philosophy' finances the restoration of Greek and Roman works of art from the Torlonia collection (Passariello, 2024). The art pieces are cyclically exhibited inside the hotel, promoting awareness of the artistic heritage also among international guests (Figure 7). In addition, Bulgari supports urban greenery by planting trees and implementing urban greenery through outdoor spaces with many plant elements. Above all Bulgari involves local craftsmen to enhance the environment and society through a long-term commitment focusing on art and patronage, education, philanthropy and inclusion, transmission of authentic Italian savoir-faire. These activities, designed to improve the environment and society, are not strictly related to brand extension, but support strategic brand management, which in turn stimulates design-led creative fertilization processes that enable increasingly complex experiences, increase the number of loyal guests and enhance brand reputation.

3. Sustainable design strategies

Nowadays, brand extension operations between fashion and hospitality face new challenges. 'The fashion system today faces the challenge of renewing business models to

intercept changes in purchasing and consumption behavior. Competition is played in the ability to create multi and omnichannel business models' (Aiolfi & Sabbadin, 2019).

At the same time, luxury brands are increasing their investments in the hospitality field, considering new investments in cafés and restaurants, in well-being, with spas and wellness centers, in hybrid living and working spaces, with luxury residences and co-working, and in luxury travel, including bespoke travel experiences and the reactivation of historical routes such as Orient Express train trips (Tovisi, 2024). Will Guidara asserts that 'we are entering into a hospitality economy' (Guidara, 2022), thereby suggesting that the elements of hospitality – namely, service excellence, human interaction, personalization of experiences, as well as product and services, and the co-creation of memorable experiences – are, in fact, what many sectors of industry require.

In this scenario hospitality-branded spaces remain significant touchpoints between clients and brand and hotspot for brand communication. Hotels participate in the 'set of activities involved in the sale of goods or services through all the channels activated at the same time with complete interaction by consumers and a full integration controlled by the retailer (Beck & Rygl, 2015)' (Aiolfi & Sabbadin, 2019) and by hospitality operator.

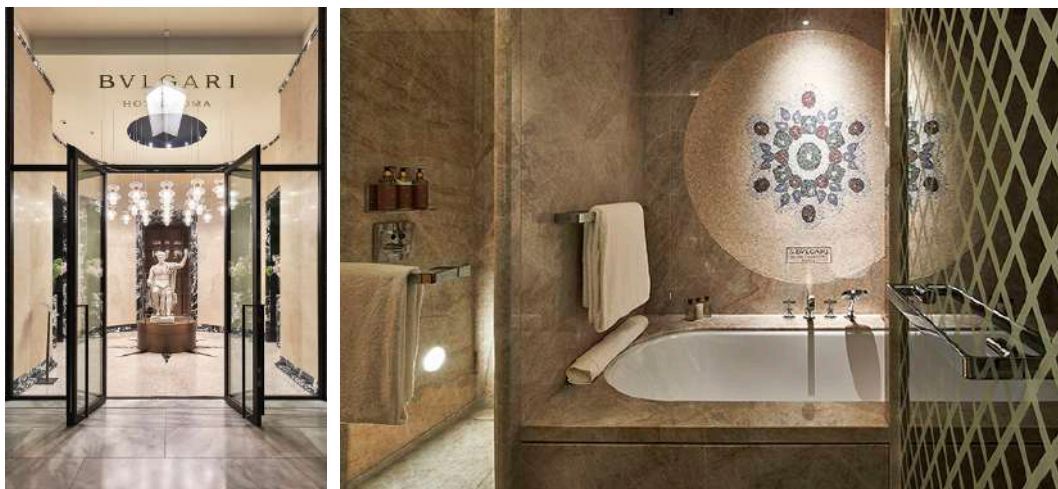


Figure 7 Figure 8 Bulgari Hotel Rome. At the entrance, the guest is greeted by a restored statue of ancient Rome from the Torlonia collection placed on the Bulgari logo inlaid with marble. The mosaic technique is used to reproduce a Bulgari jewel placed in a roundel in the bathrooms of each suite. (Courtesy of ACPV – Bulgari Hotels and Resorts).

At the same time the hospitality spaces support a 'return effect' in the economy, the Italian lifestyle experienced within the branded structures becomes a key driver for the export of Italian products, from food to fashion, design and craftsmanship. As affirmed by Luca Di Persio, Chief Marketing & Innovation Officer Italian Trade Agency, during Destination Luxury. Sustainable Travel Experience Conference (Milano, 12, feb. 2025) the strong emotional connection felt through the experience of Italianness translates into a search for Italian products in one's own contest or for new Italianness experiences to be lived even after the experience at the hotel. This process thus supports the economic growth of certain market segments.

Nowadays, the traveler in the luxury segment is changing significantly, consumers of luxury goods are becoming younger (Tufft et al., 2024; Schade, 2016), novel consumption behaviors are taking hold, hybrid living and working lifestyles are widespread, and in the post-pandemic era forgoing the strict segregation of business and leisure time to enshrine 'bleisure' phenomena (The Future of Travel Report, 2024). These travelers are considered 'travel transformers' (Hoffmann, 2019) because they revolutionize the relationship with luxury, with places and with brands. There is an increase in more unstable and intermittent relationships with the same brand, as well as greater expectations in terms of immersive, distinctive and exclusive experiences, resulting in a growing demand for bespoke luxury experiences. Concurrently, consumers are placing increasing value on authenticity, purpose and new sensitivities, such as a focus on sustainability, ecological responsibility, positive social impacts through tourism. In fact, there is a significant shift in focus from the consumption of the experience, aimed at personal satisfaction, to the evaluation of the impact of one's tourism experience in a context, aimed at verifying positive spill-over effects.

The application of sustainable development models, which reduce the environmental impact of hospitality spaces by generating a net-positive impact on the natural environment and on the social community with which it relates, has become urgent in the tourism field. The Environmental Impact on Global Tourism Report (WTTC, 2023) states that tourism affects global resources, including water, and is responsible for 8% of yearly greenhouse gas emissions (Lenzen et al., 2018). Retail spaces as well as hospitality spaces are long-term investments, both financially and culturally, that should embody a brand's core identity, but also have a significant environmental, social and cultural impact, as well as economic.

As in fashion system, hospitality interiors are subject to overconsumption and age very quickly. For this reason, brand extension processes from the fashion industry to hospitality spaces require solid skills in brand management and in licensing processes, but also in the operational processes and management of all design-led processes as well as in the creation of transdisciplinary practices capable of practical spin-offs in the project. Over the years, the brand extension experiences of luxury Italian brands, such as Missoni and Moschino, have failed mainly due to the lack of coordination between all the actors involved.

Contemporary hospitality spaces can still act as physical expression of a brand's enduring vision and values, offering consumers an immersive experience that reflects the brand's worldview and empowers them to engage meaningfully. However, in the hospitality luxury segment, there is still a lack of focus in the design-oriented approach to the issue of sustainability that is able to combine the environmental, social and economic dimensions for hotels and resort developments. Therefore, it is important to identify design strategies that can be founded in Design for Sustainability research and that could guide the development of new brand extension operations in the future. Sustainability goals can be achieved through design strategies that promote the integration of sustainability at every stage of the brand extension process. The business model must consider ESG criteria (Environmental, Social and Governance), three fundamental dimensions that make it possible to verify, measure and value the real sustainability impact of a company

or organization, in all its phases by concentrating. But there are those aspects, defined by authors, that declaratively affect design on multi-level approach such as:

4. **Sustainability oriented hospitality formats.** Defining new formats that support experiences that are not only immersive and emotional, but also transformative for the guest, i.e. capable of stimulating authentic connections with the natural environment and local communities. New travelers in the luxury segment will increasingly focus on authenticity, but also on sustainability. This has a direct impact on the design of articulated systems, where spaces and furnishings must respond to precise requirements, also identifiable through certifications, and the system of related services must be completely rethought to respond to demands for green mobility, regenerative activities for nature, significant opportunities for encounters between travelers and local communities, and the promotion of respect, inclusion and equity in local communities.
5. **Spatial storytelling based on narrative consistency.** In the hotel spaces, this approach allows for spatial narratives, conceived in sequences as in a film, through the integration of a system of codified spaces (interiors with specific finishing) - products (furniture, lighting elements as well as a selection of decorative objects) - services, related to the brand, and also immaterial aspects such as perfumes. However, it is important that the message conveyed through storytelling, which should be closely related to the brand values, is loaded with long lasting meanings. It is evident that grounding hospitality design in a clear narrative and enduring values enables luxury brands to achieve a balance between consistency and innovation. This, in turn, serves to strengthen the brand identity and align with consumer expectations for sustainability and authenticity. However, it should be noted that such an approach requires a commitment to foresight and discipline, which are qualities that are essential for crafting spaces that go beyond spectacle to deliver meaningful, empowering experiences (Thiemann, 2025).
6. **Design for longevity and timeless design.** In the luxury hospitality field sustainability requires experimentation and research. There are numerous investments in ESG criteria or social engagement activities, while in the design of spaces there remains that relationship between luxury and exclusivity that imposes choices in terms of processes, materials and finishes selections, energy consumption that are hardly sustainable. The selection of unique materials, often in small quantities and with complex supply in terms of transport and processing, as in the case of some of the world's unique marbles, is difficult to reconcile with sustainability processes unless the whole design and execution process is rethought, modifying both design principles and manufacturing processes. This area lends itself to future experiments that will reduce the impact of certain complex processes. In the meantime, it is desirable to consider extending the life of space systems, furniture and products designed for luxury hospitality. What can guide the

project is an approach based on design for longevity, where choices are guided by a spirit of innovation but are always balanced with consistent elements of the project, such as the relationship with architectural presences or material choices. These aspects also have a great impact on the project in relation to management during the execution and management phase over time, such as maintenance, possible replacement operations due to wear and tear, as well as the need to update with respect to regulations.

7. **Value of adaptability.** In the hotel spaces the system of spaces, product and services devised in the concept phase must be designed to be adaptable, through specific declinations, to different local contexts, and to different traveler/guest communities without distorting the concept or losing the close relationship with the brand identity. This aspect affects the design of the spaces but also the delivery of services and the overall atmosphere that the guest will perceive. Adaptability can be associated with the flexibility of spaces that can guarantee changes in use over time. In the luxury sector, it may be possible to develop experiments on this theme by innovating spatial layouts and improving the performance of functional spaces, but flexibility may be combined with principles of adaptability by experimenting with new space-fitting processes, such as the dry-assembly of certain equipment systems and the possibility of replacing worn-out furniture systems in individual parts. For example, the host spaces should provide modular systems for furnish the space and fixtures that ensure the space can be reconfigured to adapt to changing guest demands or update request without compromising the integrity of the space. This approach, which requires a great deal of experimentation, minimizes waste, reduces rework, improves operational efficiency and ensures that every design decision reinforces the brand message.
8. **Cooperation and education.** Design-led processes can support all processes of awareness, engagement and empowerment of hotel guests, particularly with regard to environmental sustainability, design-led processes can engage users in collaborative and educational activities that stimulate the acquisition of sustainable lifestyles, for example in the choice of certain products or eating styles. For example, considering Bulgari Hotels & Resorts the operational management is committed to entirely phasing out single-use plastic from its properties and promoting an eco-sustainable lifestyle. Some steps include the introduction of biodegradable key cards, corn-starch laundry bags, 100%-eco-friendly slippers crafted from cotton, palm leaves and cork, and metal stirrers and sugar cane straws.

4. Conclusion

In the post-modern scenario characterized by complexity and discontinuity, the luxury industry has a unique opportunity to set an example for sustainable development. Brand

extension processes are still relevant given the hospitality economy that seems to attract not only hospitality operators but all luxury brands. However, it is important to steer these processes through a design-oriented approach that takes into account sustainability objectives and promotes the definition of spaces, products and service systems that can involve the guest and offer meaningful models to inspire, not necessarily based on consumption. This means implementing compatibility between the categories in which the brand operates and those of the extension (category fit) and promoting compatibility between the associations of the brand and the extension itself (brand fit) through a sustainable multi-level approach. By prioritizing consistency over novelty, sustainability over spectacle, and collective vision over individual dominance, luxury brands can create systems capable of delivering value in terms of brand identity. The brand will be both durable (retaining its essence and core values) and flexible (able to adapt to change without losing its essence) if it is able to address important issues such as reducing environmental impact, social cooperation and inclusion, and the concrete promotion of sustainability principles in tourism, such as equity. Brand extension activities aimed at a meaningful relationship with the guest can have a positive impact on the guest's life and offer areas for research and educational experimentation for future generations of designers.

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Section 2

Collaborative & Sustainable Retail Systems

This session explores alternative models for sustainable retail, from collaborative consumption to aftercare services and exchange platforms.

Informal and resilient practices are also examined for their capacity to create local value and inspire new design approaches.

Drivers and Obstacles to Collaborative Fashion Consumption (CFC): A Literature Review

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Abstract: The environmental impact of the fashion industry, driven by overproduction and waste, requires a transition to sustainable models. Collaborative Fashion Consumption (CFC), which includes resale and rental services, offers alternatives to traditional ownership consumption habits. While resale markets are thriving, rental services, while logistically complex, are attracting considerable research interest. In this context, this paper examines the rise of CFC, highlighting the importance of digital platforms in facilitating more sustainable practices, and uses a qualitative approach to systematically analyse existing literature to understand the dynamics of CFC services and identify key challenges and opportunities for future research.

Keywords: Collaborative Fashion Consumption; Circular Economy; Product Service Systems; Servitization

1. Introduction

The fashion industry's environmental and social consequences, driven by excessive production, consumption, and waste, are facing increasing criticism (Battisti & Spennato, 2024). This is due to the gap between the amount of clothing produced and the amount purchased. Currently, we produce 400% more clothes than two decades ago, yet clothing is used nearly 40% less (*Circular Economy Strategies for Climate Action Report*, 2024). This situation results in significant unsold inventory, leading to substantial environmental and economic problems. Discarding these unsold items often involves burning or burying them, which pollutes the environment and creates textile waste. Additionally, brands face costs associated with storing and maintaining this excess stock (Ellie Jin & Shin, 2020).

In the light of this context, through strategic policy, the European Union is pushing the fashion industry towards sustainability. A 2022 strategy laid out a plan to combat fast fashion and embrace CE, with a focus on producer accountability and waste reduction. This plan is being implemented through concrete regulations, notably a December 2023

initiative targeting textile waste. This initiative seeks to establish sustainable products as the standard by holding brands responsible for their products' lifecycle, prohibiting the destruction of unsold items, setting ambitious recycling targets, enforcing transparent labelling, and investing in sustainable technologies (Eu Report, 2024). These policy actions aim to revolutionize the fashion industry and minimize its environmental impact.

As a response, Collaborative Fashion Consumption (CFC) models propose alternative clothing access through sharing, renting, swapping, and reselling, moving away from traditional ownership patterns (Iran & Schrader, 2017). This is in accordance with the overarching values of the Sharing and Circular Economy (CE) paradigm (Hina et al., 2023; Piscicelli, 2023; Sehnem et al., 2019), which in turn, prompts discussions on Product Service Systems (PSS) and *Servitization* (Han et al., 2020). A key aspect is the recognition of consumers as co-creators of value, a pillar of Service Dominant Logic (Vargo & Lusch, 2004), all facilitated by digital sharing platforms (Arrigo, 2022a).

Within the CFC scope, two types of services have emerged as particularly prominent: resale practices, often referred to as second-hand (Gopalakrishnan & Matthews, 2018; Roussat et al., 2023), and rental practices, frequently associated with subscription services (Camacho-Otero et al., 2019; Day et al., 2020; Lee & Huang, 2020; Muylaert et al., 2022). The digital fashion resale market has a notable presence in Europe and the United States, and is experiencing remarkable growth, emerging as a significant force within the fashion industry (Author, 2024). It involves the buying and selling of pre-owned clothing, accessories, and footwear, providing an alternative to traditional retail models. On the other hand, fashion rental services through digital platforms are less common in Europe and more common in the United States, those cases are mainly related to the rental of clothing for special occasions and luxury accessories or wardrobe rotation through subscriptions programs. Regarding specifically rental and resale services, the present study, shows that studies on the fashion rental business model are more prevalent. This is likely due to its inherent logistical complexity compared to resale, which involves a single transfer of ownership. Renting necessitates managing a larger inventory and ensuring garment upkeep, sparking greater research interest.

Millennials and Gen Z are often cited as the driving force behind the shift towards circular fashion models, prompting companies to reevaluate their strategies (McCoy et al., 2021). In addition, there is a peculiarity in the retail practices of fashion resale and rental platforms: in some of these services, the consumer becomes an active participant in the retail process, rather than just a recipient (Fehrer & Wieland, 2021). Consumers drive fashion retail practices and shape a complex value chain. The rise of sustainable consumption, fuelled by digital engagement, offers opportunities for a more responsible fashion system, although awareness doesn't always translate into action (Brewer, 2019). In this sense, both businesses and consumers face various barriers when engaging in those access-based consumption models (Becker-Leifhold, 2018; Singh & Giacosa, 2019). Businesses are confronted with a range of logistical challenges, including inventory manage-

ment and the potential risks of damage to goods. Concurrently, consumers may experience concerns regarding the selection available, the sizing of items, and the possibility of hygiene-related issues associated with the logistics of clothes cleaning.

Through a systematic literature review, this article seeks to identify the state of the art in Collaborative Fashion Consumption (CFC), particularly in relation to digital platforms and the concepts of 'PSS', 'CE' and '*servitisation*'.

2. CFC, PSS and Servitization: a brief theoretical background

In response to the growing concerns surrounding the environmental impact of traditional fashion consumption, CFC emerges as a potential solution. This approach challenges the linear 'take-make-dispose' model by promoting a more circular and sustainable way of engaging with fashion. The existing body of literature on CFC is intrinsically linked to broader concepts such as CE (Becker-Leifhold & Iran, 2018; Choi & He, 2019; De Bruyne & Verleye, 2023). These frameworks emphasize resource efficiency, waste reduction, and the extension of product lifecycles, all of which are central to the principles of CFC. This connection leads to discussions on the Product Service System (PSS) (Tukker, 2004, 2015), which focuses on delivering value through services rather than just physical products. Initially, PSS was understood as a market offering that combined products and services to satisfy customer needs (Goedkoop et al., 1999). Over time, the concept broadened to include Sustainable PSS (S.PSS), which emphasizes the impact of PSS on economic, environmental, and social sustainability (Vezzoli, 2017). It's crucial to note that PSS doesn't automatically guarantee sustainability; it necessitates deliberate design focused on those goals. According to Tukker (2015) certain PSS models, such as renting, sharing, and functional systems, have greater potential for environmental benefits, but overall, most PSS approaches do not produce substantial gains. Furthermore, the concept of *Servitization* (Adam et al., 2018; Pal, 2016; Ricchiardi & Bugnotto, 2019) highlights the transformation of traditional product-centric businesses into service-oriented ones, a shift that is evident in the rise of rental, resale and subscription models within the fashion industry.

In the context of CFC business models, the consumer is progressively recognised as a co-creator of value, aligning with the concept of Service Dominant Logic (Vargo & Lusch, 2004). This perspective emphasises the active role of consumers in shaping the value proposition, transcending the conventional passive recipient role. Consumers are not merely purchasing goods but are participating in a system of shared resources and experiences. Finally, the dynamic interaction of the consumer within CFC models is directly facilitated and connected to sharing digital platforms (Amasawa et al., 2023; Arrigo, 2022b). These platforms enable peer-to-peer (P2P) exchange, streamline rental processes, and foster communities around sustainable fashion practices. The accessibility and convenience offered by digital platforms are crucial drivers of the growth and adoption of CFC.

3. Methodology and Objectives

The present paper employs a Systematic Literature Review (SLR) methodology with the objective of delivering a comprehensive and reliable summary of the extant knowledge on CFC services. This undertaking seeks to identify any gaps in knowledge and areas for future research. In the context of this paper, a Systematic Literature Review (SLR) was conducted intending to:

1. Identify the state of the art of studies on Collaborative Fashion Consumption (CFC) in relation to the concepts of PSS, *servitization* and sustainability, with a focus on those services carried out through digital platforms, mainly investigating the points of view of the fields of Design, Management and Consumer Behaviour towards Sustainability.
2. Individualise future research themes.

The present review was conducted through the Scopus database, which is widely regarded as a comprehensive academic source and is frequently employed for systematic review studies. The initial step in the review process entailed the identification of search keywords that would focus on are of CFC and the concepts of PSS, *servitization* and sustainability, with a particular emphasis on services carried out through digital platforms. For this reason, the author used the following key words: (fashion OR cloth* OR textile) AND (collaborative AND fashion AND consumption OR CFC OR resale OR retail) AND (serviti* OR PSS*) AND (sustainab* OR circular*). The present study covered a time frame of 12 years (2013–2025), and it comprised exclusively English-language articles. The initial search generated 506 studies, which were narrowed down to the subject areas Business, Management and Accounting; Social Sciences; Environmental Science; Psychology; and Arts and Humanities. The search retrieved 126 articles, which were subsequently screened for an initial reading of titles and abstracts to ascertain the publications' relevance to the objectives of this study. At this stage, articles not related to the fashion industry were excluded, as well as those with no relation or contribution to the aim of the review. This initial screening led to the selection of 62 publications. Following a comprehensive review of the full texts, the selection was further refined and consolidated to 44 articles. The protocol employed for conducting the systematic literature review (SLR) is illustrated in the following scheme:

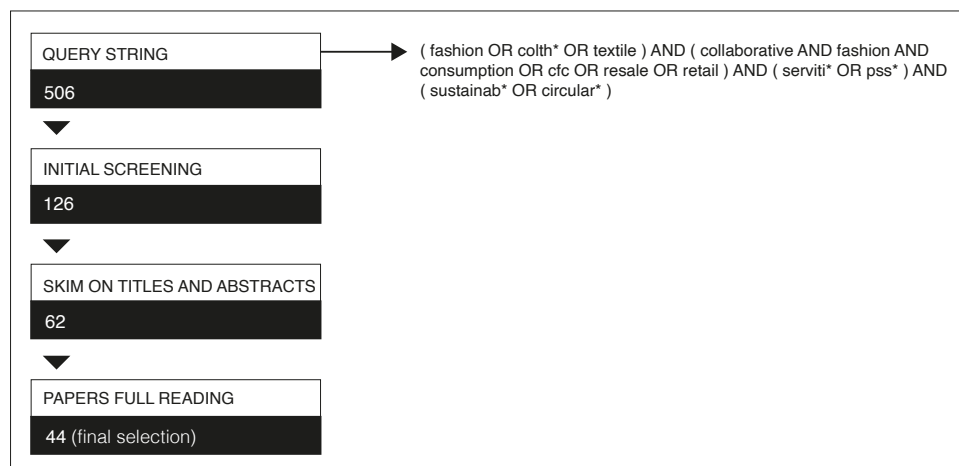


Figure 1. Summary of the methodological approach to conducting the systematic literature review

In the context of this study, research in the field of CFC is characterised by the predominance of qualitative methodologies and a recent temporal frame, encompassing the years from 2013 to 2025. This observation underscores the necessity to explore CFC as an object of study. While second-hand practices are not new, the last two decades have witnessed a significant rise in their exploration through novel, primarily digital, approaches. Consequently, there's a pressing need to develop solutions through Design practices, a domain that remains underrepresented in current research. The following tables (1 and 2) contain the 44 articles selected for the literature review and highlight the connection between the main concepts covered (these are coloured in red). The macro themes were identified through an iterative process of content analysis of the selected studies. Initial readings identified recurring themes and concepts, which were then grouped into broader thematic categories. The macro themes provided a framework for organising and comparing findings across studies. This made it possible to identify common patterns, discrepancies and emerging trends in the field of CFCs. For example, the theme of 'consumer behaviour' allowed all findings related to the consumer to be grouped together and a summary of drivers and barriers to be produced.

Table 1. Final selection of articles for the systematic literature review with the macro themes covered in the studies: timescale 2013-2022

AUTHOR/YEAR	RESEARCH AREA	METHODOLOGY	COLLABORATIVE CONSUMPTION	FASHION COLLABORATIVE CONSUMPTION	PSS	BUSINESS MODELS	DESIGN	DIGITAL PLATFORM	CONSUMER BEHAVIOUR	SHARING ECONOMY	CIRCULAR ECONOMY	SERVITIZATION
Catulli, M., Lindley, J. K., Reed, N. B., Green, A., Hyseni, H., & Kiri, S. (2013)	Consumer Behaviour	Qualitative		x			x		x			
Philip, H. E., Ozanne, L. K., & Ballantine, P. W. (2015)	Journal of Marketing Management	Qualitative	x		x			x	x	x		
Adam, M., Strahle, J., & Freise, M. (2018)	Business Strategy	Qualitative		x	x	x						
Becker-Leifhold, C., & Iran, S. (2018)	Marketing and Management	Qualitative		x					x	x	x	
Gopalakrishnan, S., & Matthews, D. (2018)	Fashion Marketing and Management	Qualitative		x		x			x			
Lang, C., & Armstrong, C. M. J. (2018)	Fashion Marketing and	Quantitative		x	x	x			x			
Khan, J., & Rundle-Thiele, S. (2019)	Marketing	Quantitative		x		x		x	x	x	x	
Park, H., & Joyner Armstrong, C. M. (2019)	Retailing and Consumer Services	Qualitative		x				x	x			
Ricchiardi, A., & Bugnotto, G. (2019)	Experimental Innovation	Qualitative		x		x	x	x	x	x	x	x
Singh, P., & Giacosa, E. (2019)	Management	Qualitative										
Cosenz, F., Rodrigues, V. P., & Rosati, F. (2020)	Business Strategy and	Qualitative				x	x					
Day, S., Godsell, J., Masi, D., & Zhang, W. (2020)	Business Strategy and the Environment	Mixed Method		x	x				x			
Mukendi, A., Davies, I., Glozer, S., & McDonagh, P. (2020)	Marketing	Qualitative		x		x			x		x	
Mukendi, A., & Henninger, C. E. (2020)	Fashion Marketing and	Qualitative		x	x	x		x	x		x	
Won, Jessica. Kim, Bo-young. (2020)	Journal of Asian Finance, Economics and Business	Qualitative		x				x	x	x		
Afief, N. F., Gabriel, D. S., & Farizal, F. (2021)	Industrial and Systems Engineering	Qualitative			x	x	x		x		x	
Fehrer, J. A., & Wieland, H. (2021)	Business Research	Qualitative										
Tunn, V. S. C., Van den Hende, E. A., Bocken, N. M. P., & Schoormans, J. P. L. (2021)	Business Strategy and the	Quantitative		x	x	x			x	x	x	
Arekrans, J., Sopjani, L., Laurenti, R., & Ritz. (2022)	Resources, Conservation	Qualitative		x	x				x	x	x	
Arrigo, E. (2022)	Fashion Marketing and Management	Qualitative		x		x		x	x	x	x	
Jain, R., Jain, K., Behl, A., Pereira, V., Del Giudice, M., & Vrontis, D. (2022)	Journal of Business Research.	Qualitative		x	x				x	x		
Khalek, S. A., & Chakraborty, A. (2022)	Retailing and Consumer Services.	Quantitative	x									
Muylaert, C., Thiry, G., Roman, P., Ruwet, C., De Hoe, R., & Marchal, K. (2022)	Frontiers in Environmental Science	Mixed Method		x	x	x			x		x	

Table 2. Final selection of articles for the systematic literature review with the macro themes covered in the studies: timescale 2023-2025

AUTHOR/YEAR	RESEARCH AREA	METHODOLOGY	COLLABORATIVE CONSUMPTION	FASHION COLLABORATIVE CONSUMPTION	PSS	BUSINESS MODELS	DESIGN	DIGITAL PLATFORM	CONSUMER BEHAVIOUR	SHARING ECONOMY	CIRCULAR ECONOMY	SERVITIZATION
Akbar, P., & Hoffmann, S. (2023)	Marketing	Qualitative	X									
Ancillai, C., Sabatini, A., Gatti, M., & Perna, A. (2023)	Technological Forecasting and Social Change	Qualitative				x			x			
Chowdhury, N., Balaraman, P., & Liu, J. (2023)	Strategy and Management	Qualitative				x			x			
De Bruyne, M.-J., & Verleye, K. (2023)	Service Management	Qualitative		x		x		x	x	x	x	
Herold, P. I., & Prokop, D. (2023)	Consumer Behaviour	Qualitative		x	x	x			x	x	x	
Hina, M., Chauhan, C., Sharma, R., & Dhir, A. (2023)	Business Strategy and the Environment	Qualitative				x				x	x	
Monticelli, A., & Costamagna, M. (2023)	Environment, Development and Sustainability	Quantitative		x	x	x					x	
Najmaei, A., & Sadeghinejad, Z. (2023)	Scientometrics	Quantitative	x		x	x				x	x	x
Nyvall, M., Zobel, T., & Mark-Herbert, C. (2023)	Corporate Social Responsibility and Environmental Management	Qualitative		x	x	x						
Roussat, C., Carbone, V., & Rouquet, A. (2023)	Operations and Production Management.	Qualitative		x	x	x		x		x	x	
Petänen, P., Tuovila, H., Heikkilä, P. (2024)	Circular Economy and Sustainability	Qualitative										
Paras, M.K., Pal, R., Ekwali, D.(2024)	Textile and Apparel	Qualitative										
Li, H., Zhao, J., Cao, Y., Su, L., Zhao, Z., Zhang, Y.(2024)	Technological Forecasting and Social Change	Qualitative										
Elli, T., Spagnoli, A., Iannilli, V.M. (2024)	Sustainable Practices and Governance in the Fashion and Textile Industry	Qualitative		x	x	x			x	x	x	x
Munten, P., Swaen, V., Vanhamme, J. (2024)	Journal of Business Research	Qualitative		x					x	x	x	
da Costa Fernandes, S., Rozenfeld, H. (2024)	Business Strategy and the Environment	Qualitative			x	x	x				x	x
Petänen, P., Sundqvist, H., Antikainen, M. (2024)	Circular Economy and Sustainability	Qualitative		x	x	x			x	x	x	
Nuttah, M.M., Roma, P., Lo Nigro, G., Perrone, G. (2024)	Journal of the Knowledge Economy	Qualitative	x					x		x	x	
Sosnowski, P.C. (2024)	Innovation and Sustainable Development	Qualitative	x			x			x	x	x	
Dethier, F., De Hoe, R., Muylaert, C., Roman, P., Ruwet, C., Thiry, G., Maréchal, K.(2025)	Journal of Cleaner Production	Quantitative		x	x				x			
Mrad, M., Semaan, R.W., Christodoulides, G., Prandelli, E. (2025)	Journal of Retailing and Consumer Services	Qualitative		x				x	x	x	x	

4. Findings

4.1 Consumer Attitudes Towards CFC

Research exploring consumer engagement with fashion collaborative services reveals a complex interplay of motivations and behaviours. A study developed by Güçü, Erdil, Kitapçı and Altındağ (2023) highlights the relatively unknown drivers behind participation, attributing this to the novelty and evolving nature of these platforms. These services, primarily attracting women, particularly in children's wear and among college students, emphasize customer retention due to the multifaced role of the costumer. Revenue diversification, including online sales and new merchandise, alongside strategic partnerships with local entities, are key business strategies. Cost savings are the primary consumer motivation, with environmental concerns playing a secondary role, although deals on luxury brands and a positive store experience are crucial for attracting shoppers (Gopalakrishnan & Matthews, 2018).

In their 2018 study, Lang and Armstrong demonstrate that fashion leaders are more likely to engage in sustainable practices, such as the purchase of redesigned garments and utilisation of repair services, than was previously presumed. This finding contradicts the assumption that individuals typically associated with fashion trends would be less interested in prolonging garment lifecycles. The lower cost of these services and their perception as a new form of fashionable consumption may explain this unexpected result (Lang & Armstrong, 2018).

A study focusing on young Chinese consumers and shared clothing reveals that environmental concern acts as a moderator, influencing the impact of factors like economic benefit, app quality, reputation, and trust on spending (Khan & Rundle-Thiele, 2019). Economic motivation is a primary driver, with trust playing a crucial role in both usage intentions and spending. Higher environmental concern strengthens the positive relationship between trust, economic benefit, and intention to use shared clothing. Environmentally conscious consumers are more likely to participate when they perceive economic advantages and platform reliability and tend to spend less on clothing overall. Interestingly, environmental concern does not directly influence the intention to use shared clothing, mirroring findings in research on environmentally friendly car adoption in China.

Won and Kim's study builds upon this foundation, proposing that consumers' hedonic and ecological motivations positively influence their attitudes towards fashion-sharing platforms, even in the absence of utilitarian motivations (Won & Kim, 2020). This assertion is further substantiated by the observed link between a positive consumer attitude and increased purchase intention within these platforms.

4.2 Rental: A Key Component of the CFC Landscape

Research in the context of this SLR favours the investigation of rental platforms over resale services (Arrigo, 2022b; Herold & Prokop, 2023; Jain et al., 2022; Melander & Arvidsson, 2021; Monticelli & Costamagna, 2023; Mukendi & Henninger, 2020; Nyvall et al.,

2023; Philip et al., 2015). The reason behind this lies in the fact that the business models differ from each other. Compared to the resale model, the rental model presents extra complexities, such as inventory management and logistics related to cleaning, damage and loss. However, despite being more complex, the fashion rental model is probably the one that has the potential to extend the lifecycle, since it maintains possession and control of the pieces to be rotated.

The motivation of individuals participating in P2P rental platforms is primarily economic in nature, with the objective being the generation of income from underutilised possessions (Philip et al., 2015). While acknowledging the value of resource efficiency and expressing a desire for increased rental frequency, concerns regarding renter behaviour are also expressed. A minority of individuals are also motivated by altruism and sustainability, though economic incentives remain the primary driver, alongside utilitarian and experiential motivations. In the context of access-based nursery and baby products collaborative services, parents place a higher value on the aesthetic appeal of these products than on the notion of ownership. Hygiene and safety considerations are of the highest importance (Catulli et al., 2013). Interestingly, parents actively participate in parenting communities while seeking to distance themselves from the "renter" label.

In the context of the fashion system, renting and reselling attract distinct user groups with varying motivations (Park & Joyner Armstrong, 2019). Environmental concern is not a major driver for either activity. Resale is often prompted by a desire to declutter for more purchases, potentially indicating rebound effects. Saving money is the dominant motivator, a key message for collaborative consumption platforms to emphasise in their marketing. Platform usability and time-saving features are crucial for user engagement. It is imperative for targeted marketing to be tailored to specific user motivations (e.g., product trial, avoiding outfit repetition, special occasions, fashion leadership) for renters. Finally, the development of a customized *servitization* model for fashion rentals highlights the importance of data-driven ideation (Ricchiardi & Bugnotto, 2019).

The challenges of implementing rental services include overcoming the linear mindset of the industry and the complexity of the collaborative framework. Successful implementation requires new management skills and a change in corporate culture. Growing awareness of sustainability and improved stakeholder knowledge offer promising prospects for this approach.

4.3 Driving CE and PSS Adoption and Success

In order to promote the effective adoption of CE and PSS in the context of collaborative consumption, policymakers must prioritise the consumer perspective, addressing cognitive biases through bottom-up approaches that focus on awareness and tailored incentives (Singh & Giacosa, 2019). It is fundamental to understand consumer perceptions before policy implementation. For companies introducing new collaborative services, continuous customer feedback, empathy, and trust are essential (Adam et al., 2018). This in-

volves understanding customer lifestyles, fostering open communication (including social media), addressing concerns, and building strategic partnerships. Internal learning and external collaboration are also key.

In addition, enterprises engaged in the development of circular supply chains are required to prioritise collaboration across all hierarchical levels, including those with competitors ("coopetition") (Sosnowski, 2024). Concurrently, governmental entities are advised to stimulate the sharing economy by reducing barriers to entry. In order to promote sustainable fashion models, retailers and brands should enhance consumer communication through the implementation of a unified, industry-wide sustainability labelling system (for example, energy ratings) instead of hangtags (Mukendi et al., 2020a). The utilisation of social media and digital channels to deliver clear and consistent sustainability information is also recommended. Finally, it is necessary to innovate social and circular business models towards a more systemic perspective that balances the tensions between social mission, environmental stewardship, and economic growth (Fehrer & Wieland, 2021).

Furthermore, research has identified the key factors influencing consumer adoption of Apparel-Based Product Service Systems (AB-PSS). General product concerns, such as contamination, remain highly relevant in the context of AB-PSS, with this being a greater deterrent for clothing than for other segments, such as bicycles. Intriguingly, consumers are willing to invest more time accessing clothing AB-PSS. (Tunn et al., 2021). Other study findings demonstrate that prior experience with Service-based Product Service Systems (SPSS) significantly influences adoption intentions for clothing. While environmental concern is a driver, its impact on sustainable practices is inconsistently reflected. Space-saving, a potential benefit of SPSS, is not a significant factor for clothing adoption, possibly because clothing is easily stored (Dethier et al., 2025). The frequency of clothing consumption also plays a role. Finally, another research found, in concordance with other studies included in this SLR, that cost is one of the primary drivers for SPSS adoption in fashion among young women. Lack of ownership or choice were not significant concerns, suggesting a broader cultural shift towards sharing (Day et al., 2020).

5. Conclusions

The fashion industry faces increasing criticism for its environmental and social consequences, driven by overproduction and waste, leading to a significant gap between production and consumption. This results in unsold inventory, causing pollution and economic burdens. In response, CFC models, aligned with CE foundations, offer alternatives like renting and reselling, facilitated by digital platforms and recognizing consumers as co-creators of value. Within this context, this paper presented a systematic literature review conducted to ascertain the current state of the art in the domain of CFC, with a particular focus on the utilization of digital platforms and the concepts of 'PSS', 'CE' and '*servitisation*'.

Research findings indicate that consumer engagement with CFC platforms is driven by a multifaceted array of motivations, with cost savings emerging as the predominant driver across diverse demographics. While environmental concerns play a role, they frequently prove secondary to economic benefits. Consumers might be aware of the environmental benefits of CFCs but fail to translate this awareness into consistent action. However, environmental consciousness functions as a substantial moderator, particularly among younger consumers and those in markets such as China, thereby reinforcing the influence of trust and economic benefits on participation.

Specifically, the drivers of CFC adoption within the context of this study can be summarized as follows:

- Economic Incentives: Cost Reduction (Primary Motivator); Access to Discounted Luxury Brands; Perceived Economic Benefits (Especially for young Chinese consumers)
- Experiential and Social Factors: Positive Retail Experience (Online and Offline); Novelty and Fashionable Nature of CFC Platforms; Hedonic and Ecological Motivations
- Trust and Platform Attributes: Trust in the Platform (Influenced by App Quality and Reputation); Environmental Concern as a Moderator
- Rental-Specific Drivers: Distinct Business Model Advantage (Compared to Resale); Enhanced Accessibility to Fashion Items; Enhanced Variety of Fashion Items

However, there are obstacles to the widespread use of CFCs:

- Platform Maturity and Consumer Understanding: Nascent and Evolving Nature of Platforms; Difficulty to understand consumer motivations
- Limited Direct Influence of Environmental Concern: Environmental Consciousness Does Not Directly Translate to Usage
- Trust Deficits: Concerns Regarding Platform Reliability and Trustworthiness
- Rental-Specific Obstacles: Concerns Regarding Hygiene and Condition of Rented Items; Logistical Complexities (Efficiency and Convenience)

Furthermore, individuals who are early adopters and trendsetters in the fashion industry are increasingly adopting sustainable practices like purchasing redesigned clothing and utilizing repair services, likely due to lower costs and the perception of these practices as a novel form of fashionable consumption. Trust is a crucial factor influencing both usage intentions and spending on shared clothing platforms, with hedonic and ecological motivations positively impacting consumer attitudes towards fashion-sharing platforms, even without strong utilitarian benefits. Consequently, a favourable consumer attitude towards CFC platforms is directly linked to increased purchase intentions, underscoring the

significance of fostering positive perceptions and experiences to drive adoption. Successful business strategies include revenue diversification, strategic partnerships, and creating a positive store experience, particularly by offering deals on luxury brands.

6. Limitations and future research

Whilst this study makes a valuable contribution to the field of Collaborative Fashion Consumption (CFC) studies, there are certain limitations that should be noted. Firstly, the findings, while drawing from diverse sources, may be subject to publication bias, as studies with positive results or those published in easily accessible databases are more likely to be included. Secondly, the reliance on studies conducted within specific geographical locations necessitates caution when extrapolating these findings to consumer populations with differing cultural or socioeconomic backgrounds. The quality assessment of the diverse studies cited could present challenges, potentially affecting the overall reliability of the conclusions. It is acknowledged that no single database comprehensively indexes all research, and that relying on a limited number of databases may result in missing relevant studies.

In terms of future research directions, the EU Circular Fashion Strategy's evolving regulations for the fashion industry present a distinctive opportunity for the implementation of CFC service models as a part of the solution to the harmful effects of the linear fashion business models; however, research has not yet thoroughly explored this area. The SLR is predominantly composed of qualitative studies, and only one study addresses the environmental implications of clothing rental through a lifecycle assessment (Monticelli & Costamagna, 2023). A significant issue remains unresolved: can fashion collaborative consumption service models, such as rental and resale, effectively mitigate overproduction within the fashion industry? Furthermore, the role of Design in the creation of these novel services is frequently overlooked in published knowledge, with the emphasis placed on managerial and marketing aspects.

In conclusion, in order to implement CFC services effectively within the fashion industry, it is necessary to thoroughly examine consumer behaviours. A significant impediment to progress in the domain of Collaborative Fashion Consumption (CFC) is the intention-action gap, which necessitates a comprehensive understanding of the factors that impede the translation of stated intentions into tangible actions.

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Beyond Purchase: Aftercare Services as a Driver of Sustainable Fashion Retail

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Abstract: As the fashion industry moves toward a circular economy, retail is evolving beyond a simple point of sale to become a hub for sustainability and long-term product care. This study explores how aftercare services, including repair, maintenance, and second-life initiatives, help brands shift from one-time transactions to service-driven customer relationships. By analyzing a diverse range of fashion brands, the research identifies six different aftercare models, each offering varying levels of digitization, channel integration, service coverage, process transparency, brand control, and customer autonomy. The findings highlight that aftercare is more than just a post-purchase service—it is a key strategy for circularity, strengthening consumer engagement and brand sustainability commitments.

Keywords: aftercare services; retail servitization; circular economy; product lifecycle extension

1. Introduction

The fashion industry is a driving force in the global economy. It ranks as the fourth-largest industry worldwide, valued at \$3 trillion, contributing 2% to the global Gross Domestic Product (GDP) and employing 33 million textile workers, a significant increase from 19.7 million over the past 25 years. Projections suggest that, within the circular economy framework, the industry could generate an additional \$4.5 trillion in economic output by 2030 and \$25 trillion by 2050 (Goldman Sachs, 2022).

Despite these economic figures, the fashion industry is the second most polluting sector globally, following the oil industry (Woodside & Fine, 2019). It exerts negative economic, environmental, and social impacts across all phases of its value chain (Bick et al., 2018; European Commission, 2022). The sector accounts for 20% of global water consumption (79 billion cubic meters) and emits 1.7 billion tonnes of CO₂ annually, equating to 10% of

global emissions (Abbate et al., 2023). It is also a major contributor to microplastic pollution (Mazotto et al., 2021) and generates 40 million tonnes of textile waste annually, most incinerated or sent to landfills.

As the industry transitions from a linear economy model (take, make, use, dispose) to a circular economy model (produce, use, reuse) (Alves et al., 2022), it faces growing pressure to adopt environmentally and socially responsible practices, driven by both government regulations and increasing consumer awareness of the ethical implications of fashion production (De Angelis et al., 2017; Grazzini et al., 2021).

The circular economy, which requires a systemic approach, represents a new production and consumption model focused on transforming waste into new resources or raw materials. This transition aims to extend product lifecycles (Li et al., 2024) through reuse, repair, and remanufacturing processes, as well as the implementation of maintenance and aftercare services (Cruz & Rosado da Cruz, 2023; Stål & Jansson, 2017).

This approach goes beyond waste management, shifting towards circular business models that mitigate fashion's environmental impact (Armstrong et al., 2016). It promotes closed-loop cycles (Gharfalkar et al., 2016) and "slowing loop" strategies (Terzioğlu, 2021), which recent studies (Mrad et al., 2025) have shown to be particularly beneficial for fashion and luxury brands. These models enable companies to integrate service-based solutions to extend product lifecycles, reducing waste and fostering a more sustainable consumption paradigm. Going beyond mere product restoration, they preserve and enhance product longevity, promoting more responsible consumption while also increasing durability (Sun et al., 2021) and encouraging more sustainable consumer behaviors (Wang et al., 2019).

In this context, the role of retail is undergoing a fundamental transformation, shifting from a transaction-based model to a service-driven approach that actively supports circular economy practices. Fashion and luxury brands are increasingly leveraging retail spaces as enablers of circularity, embedding services that not only extend product longevity but also engage consumers beyond purchase. This transition aligns with Product-Service System (PSS) strategies (Armstrong et al., 2015; Spadafora & Rapaccini, 2024; Vezzoli et al., 2015), which underpin the rise of business models such as sharing (Christodoulides et al., 2021), repair (Schiarioli et al., 2024), pre-owned/second-hand (Turunen et al., 2020), and rental/collaborative consumption (Pantano & Stylos, 2020).

Building on this shift towards retail servitization, this study examines aftercare services as a critical enabler of circularity in fashion retail. Unlike traditional aftersales services, which broadly cover customer care and logistics (Shokouhyar et al., 2020; Syahrial et al., 2019), aftercare focuses specifically on preserving product longevity through repair, maintenance, and refurbishment. It represents a holistic framework encompassing post-purchase engagement, take-back schemes, and second-life solutions, ultimately fostering responsible and sustainable consumption behaviors.

Within this scope, the study presents a systematic analysis of aftercare services currently being implemented by fashion brands to extend product lifecycles, enhance consumer engagement, and mitigate the environmental impact of fashion consumption.

2. Methodology

To investigate how fashion brands implement aftercare practices—extending product lifespan and redefining responsibility-sharing with consumers—a structured case study methodology was adopted, consisting of multiple phases that sequentially build upon one another. The first step involved identifying and selecting a diverse set of brands based on their engagement with aftercare practices, ensuring representation across different market segments, including sustainability leaders, luxury brands, high-end fashion, and accessible fashion. This initial phase allowed to construct a comparative foundation by selecting 40 brands that exhibited relevant aftercare strategies. In addition to fashion brands, service providers specializing in circularity services for fashion were initially considered, through mapping of their B2C service journeys. However, to ensure a directly comparable industry framework, the focus was ultimately decided to be exclusively on fashion brands, allowing for a more precise and sector-specific analysis. The selection was considered complete once the different market segments were significantly represented, and the cases provided a comprehensive overview of the various approaches to aftercare strategies.

Once the selection process was complete, a structured analytical lens through which to examine the aftercare journeys was established. This approach was fundamentally customer-centric, employing an *outside-in* perspective that prioritizes the consumer experience rather than internal brand operations. This perspective was critical in gaining a comprehensive view of the service structure, both in its extended temporal dimension and across various channels, while also highlighting the most interesting practices. However, this approach inherently presents a limitation, as it does not provide full visibility into the behind-the-scenes operational processes of brands. While it allows to capture how services manifest from the user's perspective, it does not reveal the internal decision-making, logistics, or operational challenges that shape these services. Recognizing this gap, future research could benefit from participatory mapping activities conducted in collaboration with brands to gain deeper insights into the internal mechanisms and strategies driving aftercare service development.

To collect relevant data, multiple information sources were employed. The primary channel was the brand's official website, particularly sections dedicated to customer service, sustainability, and repair policies. Secondary channels included all digital and physical touchpoints involved in the aftercare process, such as mobile applications, retail stores, customer support interactions, and additional online resources, including reports, articles, and customer testimonials. This multi-channel analysis approach ensured a comprehensive understanding of how brands communicate and operationalize aftercare services across different platforms.

For each selected case study, an in-depth examination was conducted using a structured documentation process. The analysis was systematized in an extensive dataset where each brand was assessed through distinct stages of the aftercare journey, thus creating detailed customer journey maps (Rosenbaum et al., 2017). These stages included: (1) Warranty/Repair Purchase, covering the initial acquisition of repair services or extended warranty plans; (2) Maintenance Onboarding, referring to tools that help customers set

up and manage product maintenance and service information; (3) Product Care & Maintenance, encompassing brand-provided resources to enable customers to take care of products independently, preventing damage; (4) Repair & Support, detailing repair and alteration services offered directly by the brand or through third-party partnerships; (5) Post-Repair, addressing the return of the repaired product to the customer; (6) Collection, analyzing brand initiatives to take back discarded products for further use; and (7) Post-Collection, examining how brands give a second life to collected items through re-sale, donation, recycling, or upcycling efforts (see Figure 1).

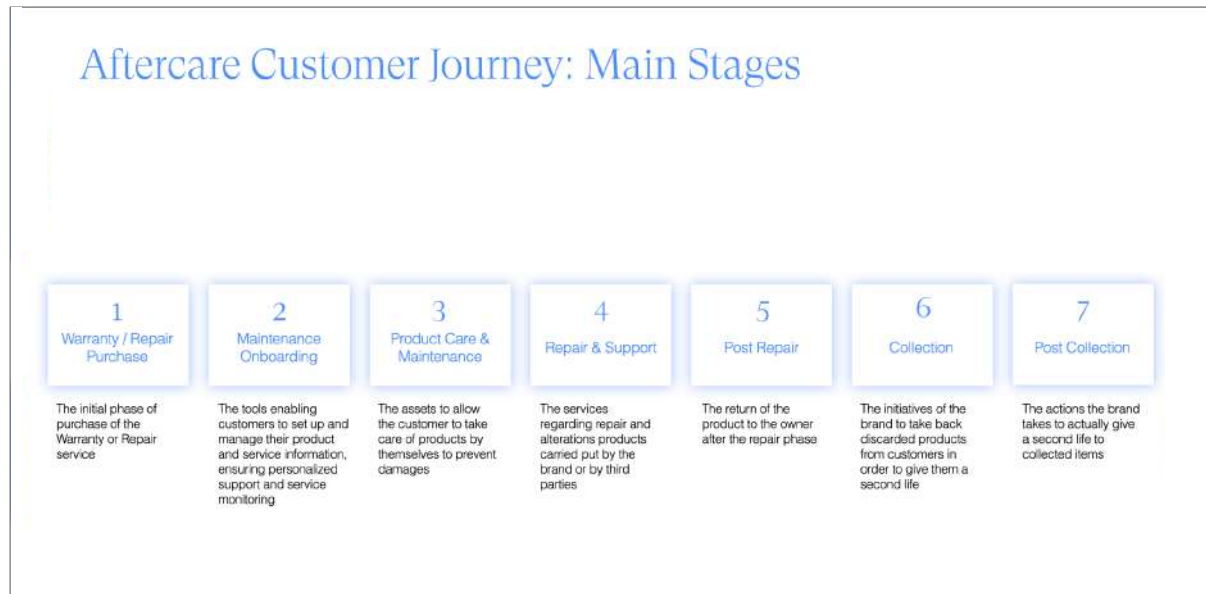


Figure 1 Main stages of a conceptualized Aftercare Customer Journey extracted from the case study analysis.

Within each stage, specific service components –physical, digital, or hybrid elements that enable aftercare services at each step were identified and categorized. These components included, for example, *physical item assessments* in the *collection stage* or *DIY repair kits* under the *product care and maintenance* phase (see Figure 2). By mapping these components across multiple brands, patterns in aftercare service structures were observed and a checklist approach was developed to determine the presence or absence of specific components across different brands. As new service components emerged, they were systematically integrated into our framework and used to reassess other brands.



Figure 2 Stages and detailed service components of a conceptualized Aftercare Customer Journey extracted from the case study analysis.

Beyond mapping the structural aspects of aftercare journeys, the analysis was further enriched by assigning specific themes to each case study, capturing the differentiating characteristics of each brand's approach (Clarke & Braun, 2017). These themes facilitated a qualitative assessment of service models, highlighting unique value propositions and strategic differentiations. Additionally, text-based descriptions were developed for each case, synthesizing the findings into narrative accounts that contextualized each brand's aftercare strategy within its broader business model.

The next phase of the research involved comparing aftercare journeys to identify patterns and commonalities. The compilation of the checklist data allowed to systematically detect recurring service structures, as well as the presence or absence of specific stages and service components across brands. To deepen the comparative analysis, key qualitative variables that characterized aftercare models were identified, including *digitization level*, which reflects the extent to which aftercare services rely on digital tools; *channels integration*, indicating how seamlessly different touchpoints are connected; *service coverage*, assessing how extensively a brand supports the aftercare journey; *process disclosure*, measuring the transparency of aftercare operations; *brand control*, defining the level of direct management a company maintains over its services; and *customer autonomy*, capturing how independently users can access and manage aftercare. Each of these variables provided a different perspective on how brands structure their aftercare services, offering insight into their strategic priorities and operational capabilities.

Based on these key variables and the similarities identified through the journey analysis, an affinity diagram approach (Plain, 2007) was employed to group brands with comparable aftercare strategies. This process led to the development of six distinct archetypes,

each representing a different conceptualization of aftercare within the fashion industry. Each archetype was described through a comprehensive synthesis of key characteristics, representative journey structures, and the strategic priorities that define its approach to aftercare.

Through this methodological process, a systematic framework for analyzing aftercare practices in fashion, identifying emerging patterns, and constructing an archetype-based classification was established. This approach provides a structured way to examine how brands operationalize aftercare, positioning it within a broader discourse on product lifecycle extension and shared responsibility between brands and consumers.

3. Results

The research resulted in six archetypes of Aftercare Services Models: the Connected Care Model, the Distributed Network Care Model, the Community-centric Care Model, the Integrated Care Model, the Minimalist Aftercare Model, and the Artisanal Care Model. For each of them a description of distinctive traits was produced from the analysis of the customer journey provided by sample brands.

3.1 The Connected Care Model

The Connected Care Model represents a paradigm shift in aftercare and sales services, with a specific focus on digitally centralized systems that enable brands to offer proactive assistance, continuously monitoring product performance and providing preventive care before issues even arise. This model leverages advanced digital technologies to create a seamless, product-centric approach to customer service and product lifecycle management. At the core of this model is the concept of a Digital Product Identity, as retrieved from the analyzed brands, including Zalando and Nanushka. This unique identifier allows every service interaction to originate from the product itself, creating a direct link between the physical item and its digital footprint. The digital ID enables highly personalized and individualized aftercare services tailored to each specific product, ensuring service efficiency and customer satisfaction. By tracking products throughout their lifecycle, companies can gather valuable data to improve product design, optimize resource use, and enhance recycling processes, contributing to overall sustainability goals.

The focus of the journey provided by this archetype is quite extended, with a focus on product tracking, real time assistance, and multiple immediate repair solutions (see Figure 3).

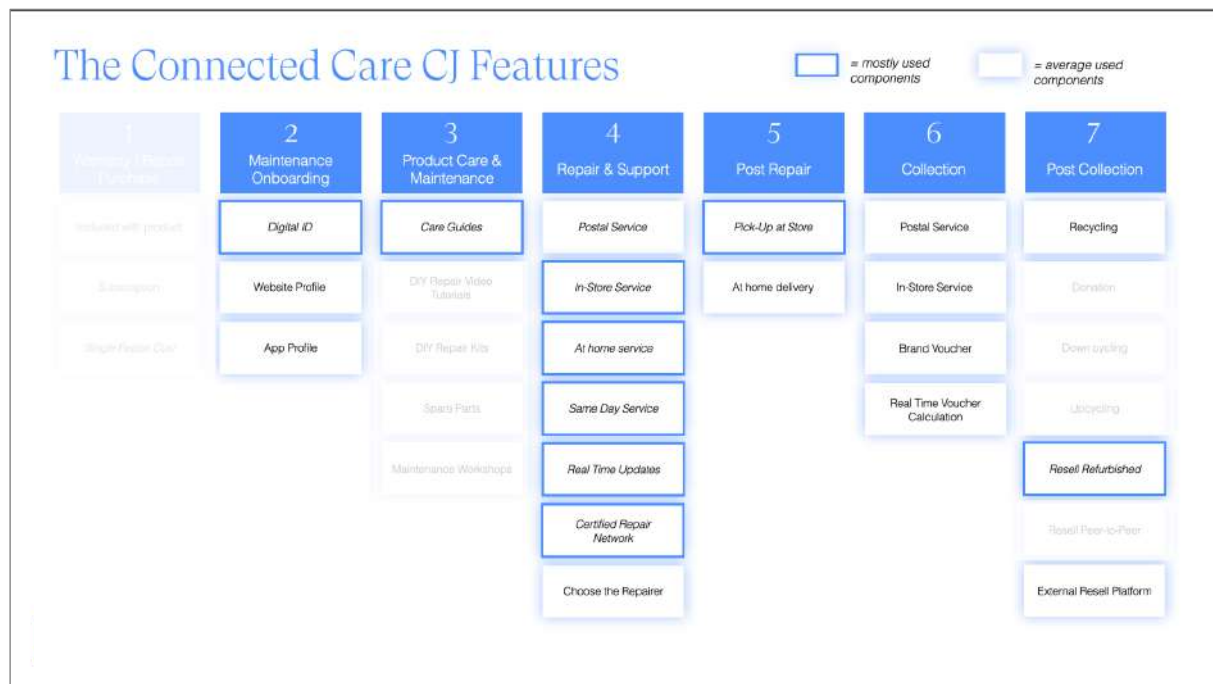


Figure 3 Customer journey diagram of the Connected Care Model, highlighting the frequency of service component implementation.

3.2 The Distributed Network Care Model

The Distributed Network Care Model represents a collaborative approach to aftercare and sales services, with a strong emphasis on ensuring holistic approaches through third-party service providers. This model leverages a network of partnerships to provide comprehensive care, with a distributed service delivery, while maintaining centralized control over brand standards, processes, data management, and sustainability goals, as evidenced by the sample brands Tentree, Mud Jeans, Reformation, and Adidas. The core of this model is a carefully curated ecosystem of third-party service providers, each bringing specialized expertise to the aftercare process. By leveraging partners, brands can rapidly scale their sustainability initiatives and service coverage, often reaching markets and offering services that would be challenging to provide in-house.

The Distributed Networkers offer a high coverage of aftercare services, focusing on providing at least one solution for each phase rather than multiple solutions for fewer steps. However, they do concentrate on the stages of *Repair* and *Collection* (see Figure 4).

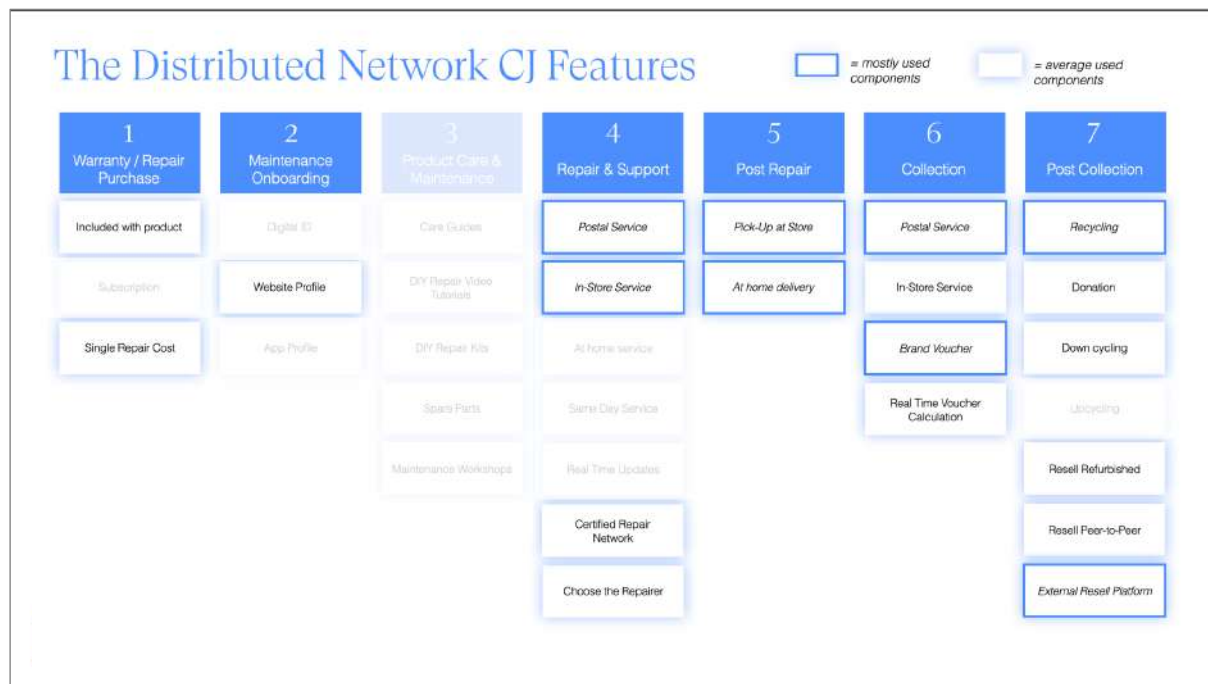


Figure 4 Customer journey diagram of the Distributed Network Care Model, highlighting the frequency of service component implementation.

3.3 The Community-Centric Care Model

The Community-Centric Care Model represents a hands-on, participatory approach to aftercare and sales services, with a strong emphasis on sustainability and customer empowerment. This model leverages community engagement and education to extend product life cycles and promote sustainable consumption habits. Examples of brands that apply this service archetype are Patagonia, Freitag, Nudie Jeans, Veja, Eileen Fisher, and Toast. Sure enough, at the core of this model is the active involvement of customers in product care and maintenance, fostering a sense of shared responsibility. The focus of brands that belong to this archetype is on providing customers with the knowledge, tools, and resources to maintain and repair products themselves. While digitally enabled, this model emphasizes in-person interactions through workshops, repair clinics, and community events. In this archetype we can find two distinct approaches: on the one hand a focus on physical services and activities aimed at engaging the local communities, on the other broader, virtual initiatives for global customer bases. The Community Centric journey is again quite extended, with a distinctive focus on the product care and maintenance phase, and on physical services when the target community is local (see Figure 5).

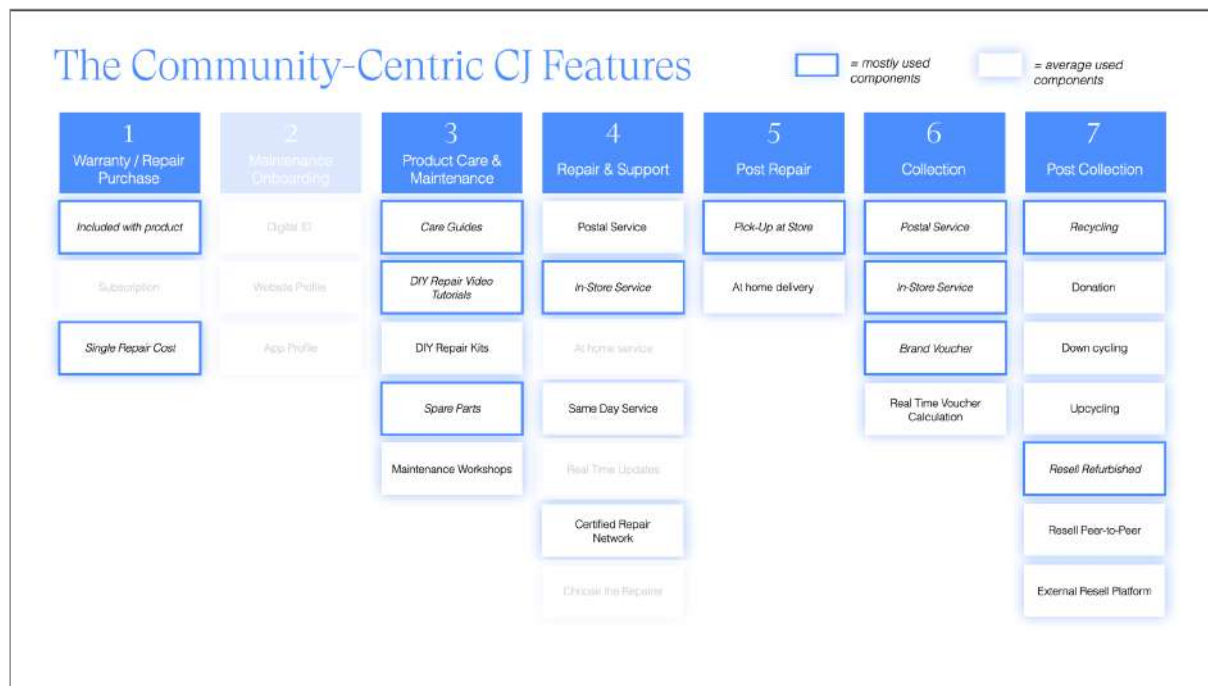


Figure 5 Customer journey diagram of the Community-Centric Care Model, highlighting the frequency of service component implementation.

3.4 The Integrated Care Model

The Integrated Care Model represents a branded and fully accountable approach to aftercare and sales services, with a focus on seamlessly blending sustainability initiatives with brand identity and lifestyle messaging. This model leverages digital integration and brand control to create a cohesive customer experience throughout the product lifecycle, harnessing product tracking and identification to enable personalized care services. This approach is clearly recognizable in brands such as Cos, Ganni, Zara, Lululemon, Pangia, and Golden Goose. All provided sustainability initiatives are carefully crafted to align with and enhance the brand's image and values, for the label maintains tight control over aftercare processes, ensuring consistency in quality and messaging across all touchpoints. If third party service-providers are involved, it is not declared to the final customer. The coverage provided by the Integrated Care Model is medium, with a specific focus on the repair and collection phases. It is important to notice that for the *Post Collection* phase they can offer various options, with however more than half of the example brands offering a branded resell space of preloved items (see Figure 6).

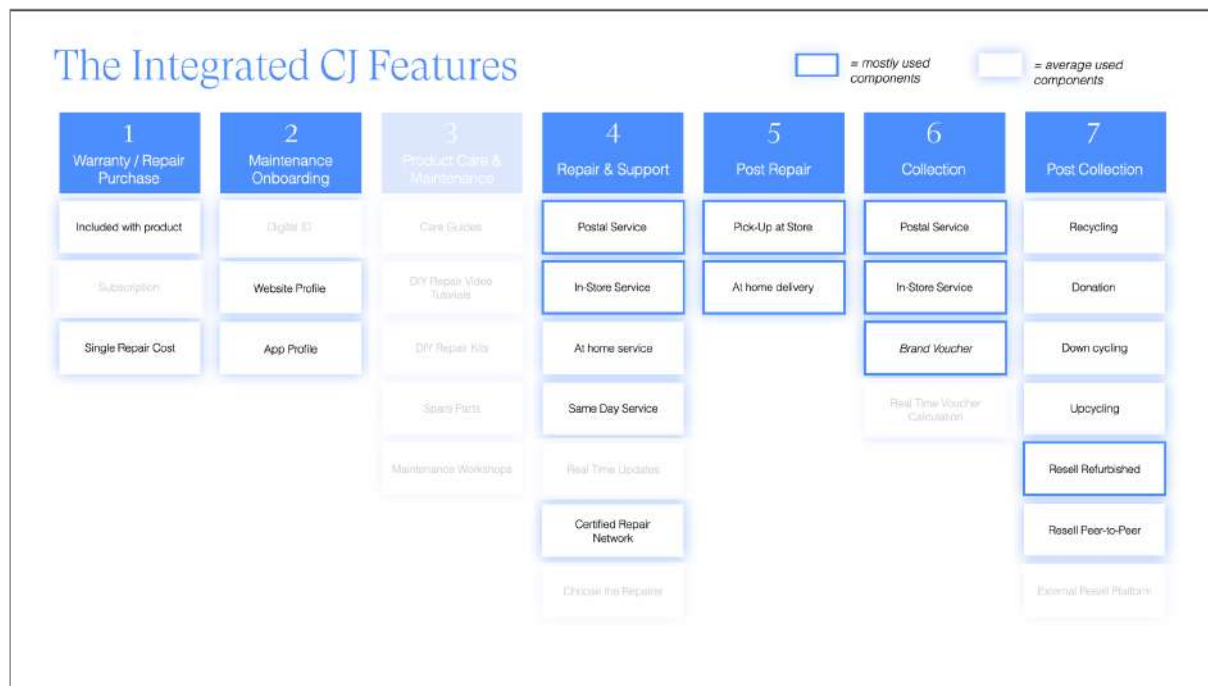


Figure 6 Customer journey diagram of the Integrated Care Model, highlighting the frequency of service component implementation.

3.5 The Minimalist Aftercare Model

The Minimalist Aftercare Model is characterized by an essential approach to aftercare services, where the brand focuses on a limited range of post-sale options, typically emphasizing a single aspect of aftercare, such as resale or simple repairs, rather than offering a broad range of services. Namely, their overall coverage of the aftercare journey is quite low, since they focus on specific stages, such as the Collection of pre-loved items, treating post-sale services as an optional extension rather than a core part of the brand's offering. This narrow focus allows the brand to allocate minimal resources while maintaining some presence in the aftercare space. The responsibility for repairs or resale is often outsourced, and the brand's control over quality and customer experience is limited, for once the product is sold, the brand's involvement in its lifecycle is minimal. The main effort is placed on maintaining a cohesive brand image through storytelling and strategic communication, even if the practical aftercare services are minimal.

The minimal approach typical of this archetype can be found in brands such as Balenciaga, Mother of Pearl, Chloé, Burberry, and Girlfriend Collective. (see Figure 7).

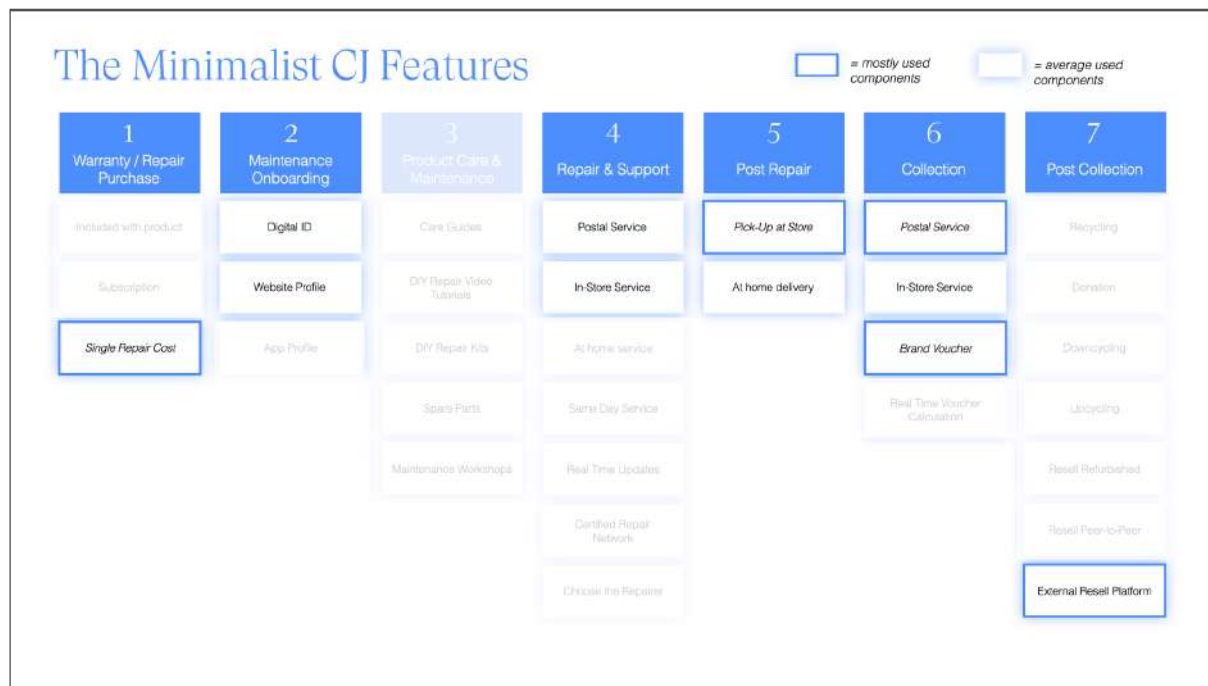


Figure 7 Customer journey diagram of the Minimalistic Care Model, highlighting the frequency of service component implementation.

3.6 The Artisanal Care Model

The Artisanal Care Model represents a hands-on, craft-focused approach to aftercare and sales services. This model emphasizes personal interactions, skilled artisans' craftsmanship, and traditional techniques in both product creation and repair, ensuring the longevity of high-quality products. It often caters to luxury or specialized markets where individual attention and expertise are highly valued. The Artisanal Care Model typically involves a single-channel strategy, with a minimal digital presence. Customers are primarily directed to in-store interactions, with appointments and concierge-style support for basic needs such as repairs and product advice. Service coverage is concentrated around repairs and resell efforts, ensuring the longevity of the product.

Brands such as Hermès, Paul Smith, Prada, Saint Laurent, Proenza Schouler, and Bottega Veneta exemplify this model by prioritizing face-to-face services and personalized care. These brands focus on maintaining product quality and longevity rather than high-volume servicing, with the key phases of the customer journey being warranties and repairs (see Figure 8).

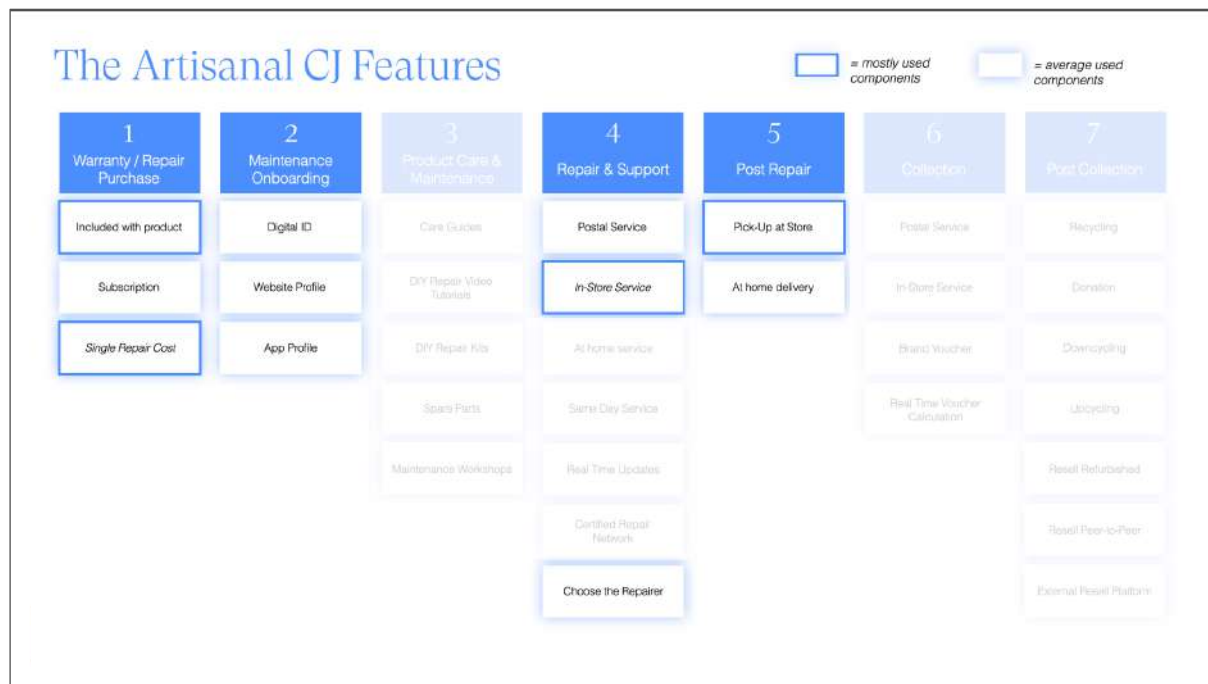


Figure 8 Customer journey diagram of the Artisanal Care Model, highlighting the frequency of service component implementation.

4. Discussions

The analysis of Aftercare Services Models in the fashion industry has led to the extraction of the main qualitative variables that define their effectiveness, sustainability and customer involvement. These variables (*digitization level*, *channels integration*, *service coverage*, *process disclosure*, *brand control* and *customer autonomy*) provided a structured way to understand how aftercare services work within different models. The six archetypes of aftercare services apply these variables differently, giving shape to distinct strategies (see Figure 9).

4.1 Digitization level

The level of digitization affects the efficiency and continuity of the services provided. Some models, such as Connected Care, rely on advanced digital tools such as IoT-based diagnostics, automatic service monitoring, and AI-based suggestions to optimize aftercare service operations. Others, such as Distributed Network Care, integrate moderate digital support, using mobile applications to connect customers with repair or resale services. In contrast, models such as Community-Centric Care and Artisanal Care deliberately limit digitalization, favoring hands-on repair shops and in-store services over automation. Minimalist Aftercare also employs low digital integration, typically limiting services to basic in-store repairs and resale. Digitization affects customer convenience, process efficiency, and the brand's ability to monitor sustainability efforts, with high-tech models excelling in automation, while low-tech models favor human interaction and a more hands-on approach.

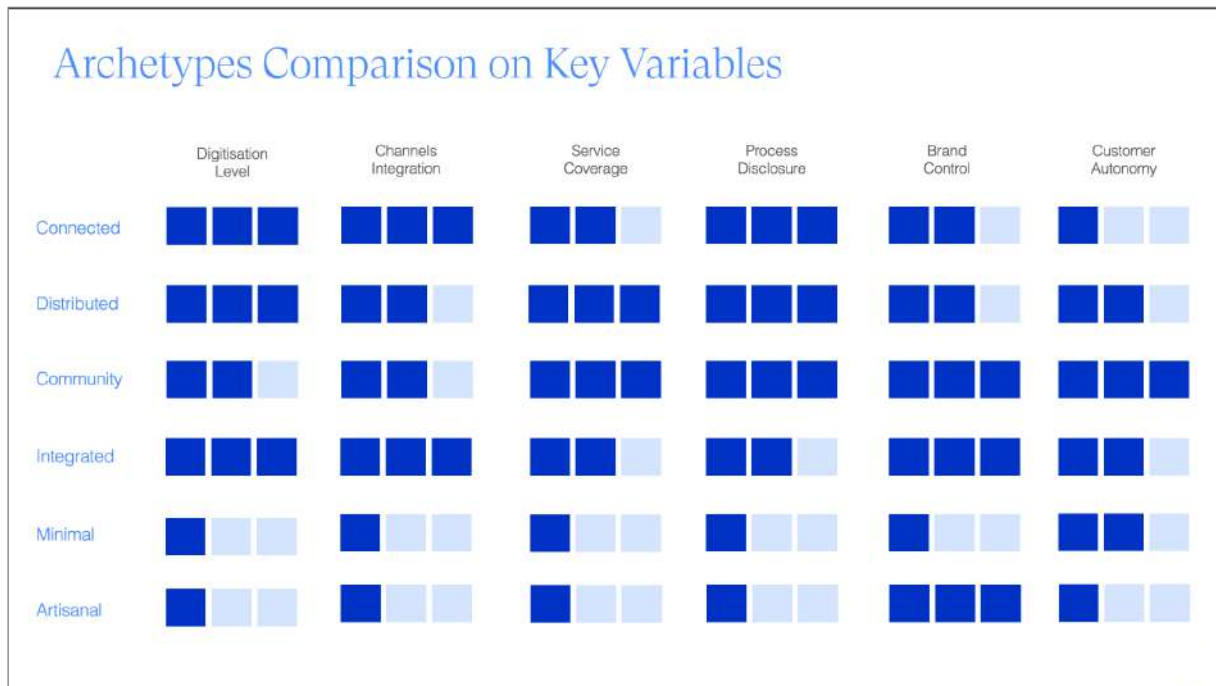


Figure 9 The six archetypes of Aftercare Services Models and their qualitative positioning according to the identified the key qualitative variables.

4.2 Channels integration

How brands connect digital and physical care services to the different channels they activate determines accessibility and ease of use. Models such as Connected Care and Integrated Care show strong omnichannel integration, ensuring that digital platforms, physical stores, and third-party service providers are seamlessly connected. Others, such as Distributed Network Care, are based on multi-channel approaches, allowing customers to access a wide range of external service providers without full integration into brand-controlled ecosystems. Community-Centric Care prioritizes in-person interactions, organizing repair workshops and sustainability events led by the community, with limited use of digital platforms. The Minimalist Aftercare Model involves a low level of channel integration, often limiting services to in-store repair or resale without significant digital support. The Artisanal Care Model, on the other hand, operates almost exclusively through physical interactions in the store, with an emphasis on quality craftsmanship and personal advice. The level of integration affects customer engagement, operational efficiency, and service accessibility, while omnichannel approaches maximize flexibility and consumer participation.

4.3 Service coverage

The breadth of services offered in Aftercare Service Models varies considerably, influencing their sustainability, effectiveness, and consumer engagement. The Connected Care and Distributed Network Care models provide comprehensive service coverage, including repair, refurbishment, resale, and recycling, ensuring customers can engage in multiple circular economy strategies. Integrated Care focuses on core aftercare service func-

tions, primarily repair, and collection, ensuring brand consistency and high service quality. Community-Centric Care extends its coverage beyond products owned by the brand, supporting DIY repair, upcycling, and second-hand resale through local initiatives and knowledge sharing. In contrast, the Minimalist Care Model offers limited-service coverage, often limiting its scope to basic repair or resale without additional sustainability services. While offering high-quality services, Artisanal Care is very selective in its coverage, focusing on luxury or bespoke items rather than mass-market solutions. Service coverage is a determining factor in a brand's commitment to circularity, with broad service portfolios enabling a more significant impact on sustainability.

4.4 Process disclosure

Transparency in aftercare services builds customer trust, supports sustainability awareness, and improves brand credibility. Models such as Connected Care and Integrated Care prioritize high disclosure of processes, providing real-time monitoring, supply chain transparency, and detailed information on repair and recycling routes. Distributed Network Care maintains moderate disclosure, ensuring quality control through third-party assessments but offering less direct visibility to consumers on procedures. Community-Centric Care promotes high transparency, encouraging consumer participation in circular practices through workshops, repair events, and open discussions on the life cycle of products. On the other hand, Minimalist Aftercare and Artisanal Care Models operate with a low disclosure of processes, offering little information on sustainability strategies, often due to the exclusive or reduced nature of the services provided. High disclosure encourages consumer involvement and participation, while low disclosure can lead to a reduction in trust and perceived risks of greenwashing.

4.5 Brand control

The level of brand control over aftercare services plays a crucial role in ensuring the quality of the service, consistency of the customer experience, and fulfillment of sustainability commitments. Models such as Connected Care and Integrated Care maintain close oversight, handling repairs, resale, and recycling within brand-managed facilities or through carefully selected partners. On the contrary, Distributed Network Care delegates part of the control to external service providers, relying on quality monitoring systems to maintain standards. Community-Centric Care takes a more decentralized approach, empowering consumers and independent providers to drive aftercare initiatives rather than imposing strict brand oversight. Minimalist Aftercare heavily outsources its services, resulting in limited brand oversight and potential inconsistencies in service quality. At the other extreme, Artisanal Care maintains strict control, with the aftercare assistance managed directly by the brand or entrusted to highly specialized artisans. The degree of brand involvement directly influences service reliability, sustainability compliance, and consumer trust, shaping how aftercare assistance is perceived and experienced.

4.6 Customer autonomy

The customer's role in the aftercare services process varies from highly automated solutions managed by the brand to self-managed service and repair initiatives. Models such

as Connected Care and Integrated Care limit customer autonomy by offering fully managed, scheduled, and concierge-type services, ensuring convenience but reducing the consumer's active participation. Distributed Network Care offers moderate autonomy, allowing customers to choose between third-party service providers within a structured network. Community-Centric Care strongly encourages autonomy, providing consumers with repair kits, knowledge-sharing platforms, and community-led workshops to engage in DIY and collaborative aftercare support solutions. Minimalist Care offers low autonomy, as services are predefined, limited in scope, and brand oriented. Similarly, the Artisanal Care Model minimizes customer autonomy, offering exclusive and highly controlled services that require direct engagement with expert artisans. High autonomy favors consumer empowerment and active participation in sustainability, while low autonomy provides high-level, controlled experiences that prioritize service quality over consumer independence.

5. Conclusions and future research directions

This study identifies the growing importance of aftercare services in shaping a more sustainable fashion retail landscape. By conceptualizing six different Aftercare Service Models, it demonstrates how brands integrate repair, maintenance, resale, and refurbishment services to prolong product lifecycles, reduce waste, and build stronger consumer relationships. The findings suggest that aftercare is not just an after-purchase function but an underlying pillar for the circular fashion strategy, with different strategies according to levels of digitization, service accessibility, and engagement level of consumers.

While high-tech, integrated models such as Connected Care and Integrated Care prioritize automation, real-time monitoring, and fluid service flows, Community-based and Artisanal models prioritize hands-on engagement, craft heritage, and local sustainability. Distributed Network and Minimalist Aftercare models, by contrast, map out opposing directions towards scalability, balancing external partnerships and measured service provision. These results provide a clear roadmap for understanding aftercare's double role—as both a sustainability tool and business opportunity—allowing brands to adapt to shifting consumer needs and regulatory forces. Although these archetypes were developed based on an analysis of medium-to-large, structured brands, this does not imply that smaller brands—especially in light of recent European policies—should be excluded from these processes. The increasing presence of aftercare service providers, such as The Seam and Sojo, illustrates both the sector's recent dynamism and the scalability potential of these models. Even brands with limited resources can integrate aftercare strategies by leveraging qualified third-party partnerships, ensuring access to specialized expertise and extended service networks.

From a policy perspective, the European Union has placed growing emphasis on circular economy principles in fashion, introducing legislation that incentivizes repair, reuse, and sustainable textile management. The EU Strategy for Sustainable and Circular Textiles (2022) establishes eco-design requirements aimed at enhancing durability, reparability, and recyclability. It also introduces Digital Product Passports (DPPs) to increase transparency and facilitate material traceability throughout the product lifecycle. In addition,

the Ecodesign for Sustainable Products Regulation (ESPR) (Regulation (EU) 2024/1781) is set to define new design criteria for textiles, ensuring that garments are produced with longevity and circularity in mind. Another key mechanism is the Extended Producer Responsibility (EPR) framework, which will become mandatory for textiles by 2025, as stipulated by the revised Waste Framework Directive (WFD) (European Commission Press Release, 2025). This policy requires brands to assume financial and operational responsibility for the end-of-life management of their products, including collection, repair, and recycling initiatives. Some EU countries have already implemented national EPR schemes, while others are currently developing measures to align with European objectives, with direct implications for fashion brands and industry stakeholders.

Looking ahead, some areas warrant further research. One key area is evaluating the long-term impact of different aftercare models, particularly in influencing consumer behavior and reducing fashion's environmental footprint. Future studies could explore how regional and demographic factors shape aftercare adoption, offering valuable insights into market-specific opportunities and challenges.

In addition, technology use in aftercare is a rapidly evolving yet relatively under researched topic. Technologies such as AI-based diagnosis, blockchain as product tracing, and digital ID systems can enhance transparency, optimize functions, and enhance aftercare accessibility to customers. Understanding how these technologies integrate into circular retailing platforms will be critical for brands that seek to enhance aftercare programs efficiently.

By bridging these gaps, future research can inform the ongoing development of fashion retail, establishing aftercare as a central aspect of circular business models and an enabler of more sustainable, consumer-led fashion practices.

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Unveiling Ecosystems of Sustainable Fashion Initiatives: A Visual Network Analysis Approach

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Abstract: This work employs data from previous research to inquire into sustainable initiatives of fashion retail and their providers using Visual Network Analysis. The technique is employed to highlight relationships and similarities among the offerings of these initiatives and to propose 12 clusters of interconnected services that address different aspects of clothes distribution, from pragmatic aspects of circular economy (e.g., repair, resell), to technological innovations (e.g., Digital Product Passports) and cultural and educational contributions (e.g., workshops and events). Additionally, it reflects on providers, discovering a number of stakeholders that do not correspond to fashion brands or fashion retailers but that play important roles in the innovation of garments distribution in a sustainable key. In conclusion it reflects on possible future scenarios in which retailers collaborate with other actors to implement sustainability practices at urban and systemic levels.

Keywords: Circular Economy; Fashion Industry; Visual Network Analysis; Servitization.

1. Introduction

An enormous amount of garments is discarded daily, often while still in good condition and far from reaching the end of its lifespan. It is estimated that the amount of sales has doubled in the last two decades but the clothing utilization declined considerably, contributing to an important waste of non-renewable materials and exploitation of ecosystems or communities (Ellen MacArthur Foundation, 2017). The future of the fashion industry must involve a re-evaluation of its business models so that it introduces fewer new products into the market and extends the lifespan of existing ones. Reducing reliance on linear economic models in favor of more sustainable circular models (Colombi & D'Itria, 2023; Potting et al., 2017; Vezzoli et al., 2022) will not only impact production environments but will also have significant implications for the last mile of the supply chain, namely retail businesses. Engaging in the circular economy requires adopting a proactive role that goes beyond the transfer of ownership, embracing the provision of product-supporting services, also known as servitization (Vandermerwe & Rada, 1988; Kanatli & Karaer, 2022; Tosun & Tosun, 2023) or product-service systems (Tukker, 2004; Vezzoli et al., 2022).

The physical retail stores preserve a strategic role in presenting garments and creating meaningful customer experiences, especially because of the importance of tactile and sensorial probes (Alexander & Varley, 2025). Stores can be “flexible, multi-functional, curated, personalized, immersive and integrated designed environments” that offer immersive experiences, and this is the case of “slow retail” according to (Alexander & Blazquez Cano, 2020). The term slow retail is also discussed by (Matheny, 2023) highlighting the educational role that stores have in promoting sustainable practices to customers. Such premises testify how retail businesses can actively participate in the sustainable transition, which is partly driven by communities of conscious consumers and partly by governmental institutions.

In 2024, Europe introduced the Ecodesign for Sustainable Products Regulation (ESPR)¹, a framework legislation that introduces new requirements for products placed in the EU market. Starting from 2027, a list of product categories that include textiles will require the adoption of Digital Product Passports (DPP), a digital identity assigned to products to promote transparency and traceability. It will enter into force by 2027 establishing data requirements to identify materials, manufacturing processes, certifications, lifecycle history and more. It will back future circular business models allowing consumers, businesses, and regulators to access products data via QR codes, NFC, RFID, or blockchain. DPPs will enable better access and visibility over supply chains, resale platforms, instructions, maintenance guides, and recycling networks helping products value retention and hampering counterfeiting.

This contribution aims at analyzing data derived from previous research to identify categories of sustainable actors and services that are oriented to sustainability. It does so with the goal of presenting an analysis of the currently available circularity initiatives that contribute to a more sustainable fashion industry via retail.

2. Background

In the context of “retail servitization” (Kanatlı & Karaer, 2022; Tosun & Tosun, 2023; Vandermerwe & Rada, 1988), a previous research (Elli et al., 2024) employed a case studies analysis, that interested more than 500 examples, to identify sustainability initiatives that impact the business conducted in retail spaces, being them physical, brick n’ mortar or digital, and strengthen their relationship with circular economy, customer education and distributive justice (Bastos Rudolph et al., 2023). The list of cases started from previous knowledge of the authors and is enriched with snowballing and literature review; cases were analyzed across 2023 and 2024 with a netnography approach (Kozinets, 1998) that is the observation of communities, markets, and consumer behavior in websites and online interactions. The study identified initiatives that appear similar, because, although provided by different actors, represent the same goal (i.e., repairing, collecting end-of-life products, demonstrations, etc.), and reconducted them to named “service template”. The identified service templates are about 142 and are organized in ontological

¹ Further information about the ESPR is available at <https://bit.ly/4jP0Rka> (Accessed 2025-02-10)

areas: [A1] environmental sustainability, [A2] culture of sustainability². The entities that offer services, named Providers, and the inquired examples, named Case Studies, are stored in dedicated tables. Information is structured and organized into a relational database that employs identification codes to link services of A1 or A2 with corresponding providers (Figure 2).

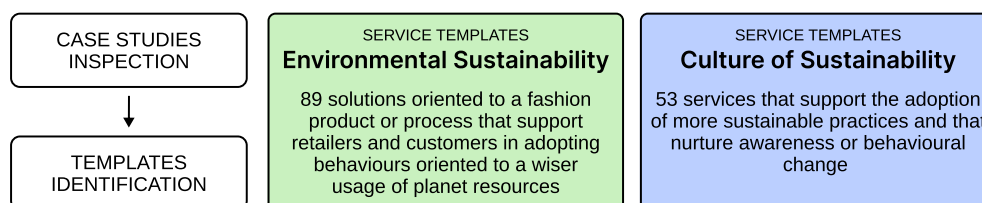


Figure 1 Visual summary of the two areas of sustainability that contain the identified 142 service templates

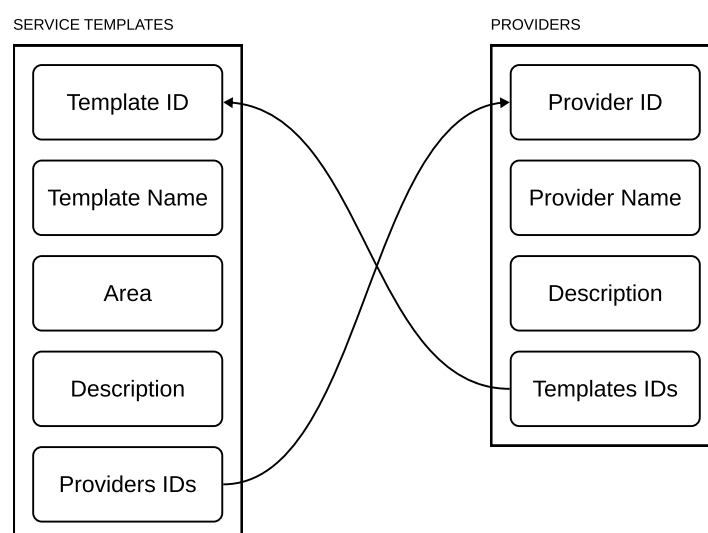


Figure 2 The relational database employed to organize the results of case studies research. It is composed of two tables: Service Templates (A1 and A2) and Providers. The two types of entities are connected via IDs.

The aforementioned research formulated an ontology of services to describe the panorama of sustainability in retail, offering retailers an actionable understanding of their agency in the transition to sustainability, to further develop their business in sustainable ways. This contribution is a prosecution of the previous research, and it is aimed at inquiring the relationships between sustainable services and providers. To do so, it employs network analysis.

A network graph (Barabási & Pósfai, 2016) is a structured representation that encapsulates how entities, referred to as nodes or vertices, are interconnected through relationships, known as edges or links (Figure 3). These edges may depict diverse types of interactions—such as collaboration, communication, or exchange of resources—and can be

² The considered previous research also recognized a third area ([A3] implementation of social sustainability), but it is not taken into consideration in this study.

either directed or undirected, weighted or unweighted, depending on the nature of the data. By illustrating the structure of relationships across multiple dimensions, network graphs facilitate the visualization and analysis of intricate systems, whether biological, social, or organizational. In the context of sustainable retail, network graphs can be used to study which provider offer which services. Nodes represent distinct elements—for instance, providers or sustainability initiatives—while edges convey the relationships among them.

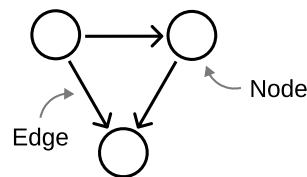


Figure 3 Example of directed graph with 3 vertices and 3 edges. The direction of edges can be indicated by arrows or curved lines. Straight lines with no arrow would represent undirected edges.

In the context of the retail industry, network analysis has been used for different purposes. In relation to regional retail landscapes, a study utilized the Leiden community detection algorithm³ (Traag et al., 2019) and other spatial methods for understanding communities behaviours in daily goods shopping; findings revealed that such type of communities tend to remain small, highlighting localized shopping behaviors (Verhetsel et al., 2022). In the context of logistics, is employed to optimize the delivery of goods of a retail company, increasing its efficiency and reducing carbon footprint of products (Saci, 2022). A further study explored the impact of new businesses on local market ecosystems using networks for modelling cooperation and competition behaviours in urban retail ecosystems. By representing cities as connected networks of venues, researchers quantified their structure and characterized their dynamics over time. They built an artificial intelligent tool to predict the impact of new retail spaces on the local ecosystem; the tool can support policymakers, business owners, and urban planners (Cambe et al., 2021). Transactions data are used to model relationships among products and customers in form of a network and later to formulate purchase recommendations based on community detection and buying behaviors (Priya, 2018). Additionally, networks can support the development of delightful shopping experiences learning from shoppers' preferences acquired via retail analytics, and revealing insights about customers' preferences as well as products driving revenue to the store (Sambasivan et al., 2021).

Most of the above examples are based on forms of Social Network analysis (SNA), a family of quantitative approaches that focus on mathematical qualifications of networks features (Borgatti et al., 2009). When we look at different approaches to network analysis, Decuyper recognizes qualitative forms that can be traced back to the ethnographic tradition of social anthropology (Knox et al., 2006; Decuyper, 2020) and appear to adopt more flexible and interpretive approaches, especially if compared to SNA (Gamper et al.,

³ Community detection algorithms are computational methods that group closely connected nodes within a network, highlighting meaningful substructures and revealing patterns that help researchers interpret and analyze complex data.

2012; Decuyper, 2020). One of the available method to qualitatively analyse networks is Visual Network Analysis (VNA), which enables the exploration and interpretation of relational data through visualizations. Rather than emphasizing mathematical qualifications of structural features, VNA focuses on the visual attributes of networks and provides a conceptual toolkit for examining these elements in a qualitative manner (Decuyper, 2020): while traditional SNA relies on quantitative metrics, VNA emphasizes the heuristic value of ambiguity, acknowledging that network visualizations do not merely represent relationships but serve as investigative tools for exploring complex entanglements within data (Venturini et al., 2021). It is worth remembering that data is never capable of perfectly representing the observed phenomenon and while we need to use it to study and represent a context, data select only specific attributes of it (Drucker, 2020; Kennedy et al., 2016; Nagel, 1989). The VNA benefits from the inherent ambiguity of network visualizations, aiming to leverage it for exploratory data analysis without imposing rigid analytical constraints (Venturini et al., 2021); it consists of four key steps: (1) collecting and coding relational data and structuring it into a network format; (2) visualizing network diagrams using software such as Gephi (Bastian et al., 2009) to project networks data into two-dimensional spaces where positioning is influenced by relational properties⁴; (3) examining the layouts for patterns such as clusters, bridges, and central nodes; (4) interpreting visualizations and extracting narratives and insights on how the network structure renders social dynamics visible (Venturini et al., 2021).

⁴ The process that projects data on a bi-dimensional space according to relational properties is called "spatialization".

3. Methodology

In the context of this study, the data about service templates previously collected (see 2. Background) is visualized in the form of a network graph. Nodes correspond to services and to service providers, while edges capture the relationships between them, thereby enabling both visualization and analysis of how these entities interact within a larger system. Nodes are linked if a relationship exists among them, therefore if a service of A1 or A2 is offered by a provider. The visualization is created using Gephi (Bastian et al., 2009), applying the Force Atlas 2 layout (Jacomy et al., 2014). This layout functions like a magnetic system: services and providers with stronger connections are pulled closer together, while those with fewer links spread apart, making patterns and clusters easier to identify. The process reveals the network's structure and highlight clusters or communities within the data. Results are then analyzed searching for global patterns, localized clusters, and the most interconnected elements. Providers that connect to two or more service templates are further inquired to understand involved stakeholders that participate in the presented sustainable initiatives. They are grouped according to their typologies, that go beyond fashion brands and are discussed along with exemplar case studies. The presented findings are produced synthesizing information collected using secondary research (i.e., from websites, magazines, reports and social networks).

4. Results

The graph (Figure 4) is composed by nodes of three typologies. Service templates for environmental sustainability in green, templates for the culture of sustainability in blue, and service providers in brown.

4.1 Cluster analysis

The two main organizational areas, Environmental Sustainability [A1] and the Culture of Sustainability [A2], are only partially mixed. According to the available data, contamination mostly occurs in the context of “reparation and mending” (C09, see below), in which the provision of environmentally effective reparation services is flanked by reparation kits and guides, creation of consumers communities for reciprocating support, and events to teach or demonstrate techniques. Twenty-five service templates appear as unconnected “molecules” and are floating around the formed clusters in arbitrary position because they do not share connections with other templates. Through visual analysis, instead, it is possible to identify a total of 12 cluster of services [C 01-12].

[C 01] On-Demand Production Ecosystem. This cluster includes on-demand manufacturing and supply chain solutions designed to reduce waste, and foster customization, hampering overproduction. The offerings include digital fabrication services capable of producing garments based on precise user inputs, traditional on-demand production platforms that align manufacturing volumes with real-time market needs, and white-label product configurators that empower consumers to co-create designs. Underpinning these solutions are supply chain management platforms optimized for agile, low-inventory operations.

[C 02] Resource Recovery and Regeneration. These initiatives can be linked to retail businesses and partly exemplify a circular economy model (Colombi & D'Itria, 2023; Potting et al., 2017; Vezzoli et al., 2022), recovering materials and reducing footprints within the manufacturing and waste management sectors. These services encompass technologically advanced processes for sorting, recycling, and repurposing textile and plastic waste streams. Industrial Sorting employs automated systems and sensors to rapidly divert garments and textiles, while Industrial Fiber Regeneration breaks them down into raw components suitable for new textile production. Plastic Regeneration follows parallel methodologies, collecting and processing waste into usable pellets or material inputs like recycled polyester. Down-cycling diversifies these offerings by converting materials into lower-grade products, mitigating landfill accumulation and prolonging resource lifespans.

[C 03] Vintage Retail Models. These models help prolonging product lifecycles via engagement with vintage fashion. The services include curated e-commerce platforms that authenticate items, B2C stores offering carefully selected vintage clothing and accessories, and purchasing formats that incentivize accessible price points (i.e., pay-per-weight and all-you-can-grab events). Additionally, B2C rental services cater to specialized needs by providing vintage garments for creative industries or special events, complemented by personalized consultations and cleaning services.

[C 04] Digital Print. These services bridge consumers, brands, and skilled producers through on-demand manufacturing and digital printing processes. On-demand Digital Print offers customization and enables garment creation tailored to individual preferences. Providers of digital print also offer On-demand B2C Manufacturing to connect creators directly to artisans, promoting low-waste production and entrepreneurial innovation by reducing overstock and empowering local craft. Meanwhile, the B2B Artisanal Platform fosters partnerships between brands and specialized suppliers, facilitating transparent supply chains and handcrafted quality.

[C 05] Community-centric Collection Initiatives. This cluster highlights donation channels and sorting, crucial for extending textile lifespans and reducing fashion-related waste. Physical General Donation stations enable straightforward drop-offs, connecting consumers with charitable organizations or thrift stores. Postal Rewarded Collection extends reach allowing remote contributions. Common underpinning is the Manual Sorting Process, which relies on dedicated workers to grade items for resale, recycling, or repurposing. Italian Third Sector social enterprises play a central role in services of this cluster, creating social and environmental value by managing collection, supporting vulnerable populations, and advancing circular fashion through resource-efficient redistribution.

[C 06] Digital Passport-Driven Solutions. This cluster includes tools and services built upon the Digital Product Passport concept, strengthening transparency, traceability, and consumer empowerment. The Digital Product Passport centralizes essential product data, while complementary solutions (i.e., story-driven passport features, interactive supplier maps, supplier assessments, certification directories, carbon footprint calculators, sustainable brand directories, and how-to repair guides) broaden its scope.

[C 07] Demonstrations. Includes initiatives of companies focused on sustainability that employ form of recycling, on-demand production or technological innovations.

[C 08] Second-hand Circulation Ecosystem. Second-hand product circulation has evolved into a multifaceted ecosystem of B2C and B2B solutions that simplify the resale process. P2P Curated Pre-loved Marketplaces and B2C Curated Consignment Marketplaces grant individuals and brands the opportunity to connect with conscious shoppers, while dedicated services like Resale as-a-Service and B2B White-Labeled Resale All-in-One Solutions empower organizations to integrate circular practices within their business models. Garment Authentication and Quality Control, coupled with B2B Restoration Services, ensure that second-hand products meet high-quality standards, building buyer trust. Finally, Aftercare Platforms, Online Refurbishing Marketplaces, and B2C Renewed E-Commerce solutions facilitate ongoing support for pre-owned products, further extending their lifespan. In support of the above, Reverse Logistics solutions optimize returns and inventory management.

[C 09] Repairation and Mending Services. These integrated repair, maintenance, and creative enhancement services prolong product lifecycles also by cultivating user skills. In-store Repairation Services designate dedicated spaces for customers to obtain on-site repairs, while In-Network Repairation Services rely on authorized external partners for high-quality maintenance. Postal Repairation Services allow remote garment repairs, ensuring convenience and broader coverage. Kits for Modular Fashion provide interchangeable components, enabling product customization and prolonging utility. Postal Creative Mending offers mail-based artistry that refresh pre-owned items, complemented by Creative Repairation Tutorials for at-home learning. DIY Repair Kits and Mending Kits empower individuals to address minor damages independently, whereas Creative Repairation Workshops nurture hands-on instruction, community engagement, and inventive upcycling methods.

[C 10] Artisanship and sustainability. The participation of institutional and local actors appears to link sustainability to artisanship, creating opportunities for innovation, showcase and indexing of artisanal activities.

[C 11] Upcycling. Upcycling services foster creative waste reduction and material transformation. Upcycling Brands reimagine discarded resources (i.e., textiles, plastics, and metals) into high-quality items that resonate with eco-conscious consumers. Upcycling Collections highlight limited-edition collaborations, blending sustainability with exclusivity. Complementing these efforts, Upcycling Marketplaces curate talented designers who offer distinctive, repurposed creations and enable personalized consumer engagement, including garment customization. Finally, the B2B Upcycle Service assists businesses in mitigating surplus inventory or production waste by partnering with skilled providers that transform leftovers and overproduction into new products.

[C 12] Community-oriented events. These initiatives promote community-driven, hands-on engagement, cultivating practical skills, social cohesion, and environmental awareness. Swap Events facilitate direct exchanges of gently used items, thereby limiting consumption of new goods. DIY Repair Labs enable individuals to mend or restore belongings in a supportive environment equipped with tools and professional guidance. Handicraft Courses and Workshops further expand participants' competencies, introducing traditional and modern techniques that emphasize circular design principles. In Upcycling

Workshops, attendees creatively repurpose materials into new items, bolstering resource efficiency. Meanwhile, Workshop Organization services coordinate the logistics and facilitation of these interactive sessions, ensuring broad accessibility and impactful learning.

4.2 Service Providers Analysis

Providers are largely brands in the fashion industry that demonstrate interest towards sustainability. However, the visualization reveals other typologies of actors that meaningfully contribute to the sustainable distribution and circulation of fashion products, that we need to consider in relation to sustainable retailing business models. This section describes the most important groups of non-brand providers focusing on their provided services.

Local Circularity hubs are institutional programmes dedicated to strengthening local manufacturing sectors through showcase events and community engagement. For instance, Manifattura Milano, one of the actions of Centrinno EU project, is an initiative dedicated to urban craftsmanship, manufacturing, and the circular economy in the fashion and design sectors. It promotes sustainable practices and the reuse of materials among artisans, designers, and small enterprises in Milan and it emphasizes the importance of creating synergies among local organizations. Made in Baltimore (USA) is a program that supports local manufacturers, artisans, and small businesses. It aims to strengthen the city's manufacturing sector by providing resources, networking opportunities, and promoting locally produced goods. The programs also highlights initiatives related to the circular economy, such as organizing tours and events to educate and engage the community in sustainable practices. A-gain (Germany) is a project that focuses on guiding individuals and businesses in reusing, repairing and recycling garments. Their 'Circularity Providers Map' is a service that functions as a directory of circularity providers. This tool allows users to discover providers that support circular economy to businesses and costumers.

Digital fabrication labs support circularity in fashion by integrating digital fabrication, up-cycling, local production, and education into their operations. They employ methods such as 3D printing or laser cutting to design processes that reduce waste, including modular fashion. They promote garment repair, swap events, and material repurposing, extending product and material lifespans and minimizing waste. They can focus on testing and prototyping new textiles and biomaterials, contributing to sustainable fashion research. These labs work with makers and with fashion brands, integrating technology into design: OpenDot (Milan) digitally manufactured accessories for Versace's collection; WeMake (Milan) laser-cuts textiles to blend couture with technology for Imperfect; Textile Prototyping Lab (Berlin) collaborates with designers and manufacturers to develop sustainable textile innovations.

Providers of Digital Product Passport (DPP). Among the identified providers, EON creates Digital IDs for products, enabling full supply chain traceability and integration with resale and recycling platforms. It partners with luxury brands like Chloé to offer Instant Resale,

connecting fashion products seamlessly to second-hand markets. Circular.Fashion: developed circularity.ID®, a system that helps fashion brands track materials and enable re-use, resale, and recycling, connecting them to reverse supply chains. Cirpass is a European-funded research project working to establish a standardized Digital Product Passport framework. It collaborates with industry leaders and policymakers to create DPP standards. Certilogo: Focuses on authentication and counterfeit prevention, using DPP to verify product authenticity, track lifecycle data, and facilitate resale or recycling. It enables consumers to scan a product and confirm its provenance. Aura Authentication Consortium, promoted by LVMH, Prada, Cartier and other luxury brands, uses blockchain technology to power DPP and ensure authenticity and transparency in high-end fashion. It helps brands prevent fraud while promoting responsible sourcing and resale.

Transparency platforms share the common goal of empowering consumers and brands to make informed, ethical decisions by providing verified information on environmental and social impacts. They appear to be complementary to DPP providers, working downstream and integrating autonomously conducted research about brands and products. For instance, Renoon aggregates data on fashion brands and products, focusing on transparency and ethical practices. It offers dashboards and e-commerce widgets to help brands track, showcase, and communicate their environmental and ethical impacts to consumers. Provenance validates sustainability claims for consumers providing businesses with data-backed verification tools, such as e-commerce widgets displaying clickable banners, to communicate their environmental and social impact transparently, thereby hampering greenwashing and building consumer trust. Good On You is a leading platform that evaluates and rates fashion brands based on their sustainability practices, including impacts on people, the planet, and animals. It offers accessible information to consume a more ethical fashion and provides brands with a detailed sustainability dashboard to assess and communicate their performance.

Providers of Circularity-as-a-service are companies that promote the platformization of circularity, offering solutions that help fashion brands to shift towards sustainable business models, especially through retail collaborations and scalable logistics. They can be B2C and/or B2B and may offer white-label solutions. Recircles is a reverse logistics company that helps fashion brands implement circular business models by sorting and processing returned, pre-owned, or end-of-life garments into resale, recycling, or upcycling pathways. Bleckmann is a fashion logistics giant offering circular solutions such as reverse logistics, repair services, and take-back programs for brands like COS and Otrium. ReCircled is a B2B reverse logistics provider that helps fashion brands sort, refurbish, and resell used garments. It collaborates with brands like Timberland to create take-back programs that extend product life and enable sustainable disposal. Supercircle is a circular logistics platform that partners with brands like Girlfriend Collective to create closed-loop recycling systems, collecting and repurposing used garments while rewarding consumers with incentives. The Seam is a B2C tailoring and repair platform that connects consumers with local seamstresses for alterations, repairs, and garment care; it also partners with luxury brands like Net-A-Porter to offer aftercare services. SOJO is a tech-enabled clothing repair and alterations platform, allowing users to seamlessly schedule pick-ups and delivery for tailoring services.

Third Sector Organizations (TSOs) actively contribute to circular economy focusing on social value rather than profit. They address issues such as welfare, education, and sustainability, reinvesting profits to further their positive impact on society. They can be charities, community groups, and social enterprises and play a crucial role in promoting circularity in fashion by reducing waste, facilitating reuse and resale, enabling repairs, and fostering social inclusion. They focus on collecting, sorting, repairing, and redistributing used garments and footwear, ensuring they remain in use for as long as possible. Many of these organizations also provide employment opportunities for marginalized communities, reinforcing the circularity social impact, one of the pillars of sustainability (Purvis et al., 2019). Their work hampers linear economy, supports local economies, and educates consumers on responsible consumption. For instance, Traid, Recooper, and Vesti Solidale focus on collecting, sorting, and reselling second-hand clothing, ensuring that donated products are reused or recycled responsibly. Traid operates charity shops in the UK, while Recooper and Vesti Solidale run collection and sorting programs in Italy, with a strong focus on social inclusion and sustainability. United Repair Centre (Amsterdam) is a B2B repair service that helps brands like Patagonia and The North Face integrate garment repair into their customer offerings, extending product lifecycles while providing employment for marginalized communities. Soles4Souls specializes in shoe and clothing redistribution, turning unwanted footwear and garments into opportunities for those in need, reducing waste while creating economic empowerment programs worldwide.

5. Discussions and Conclusions

This work leverages VNA (Decuyper, 2020; Venturini et al., 2021), a methodology that has become increasingly relevant in social sciences, to inquire sustainability initiatives of fashion retail (i.e. service templates) and their providers. In the context of a transition to a more sustainable industry, the study reuses data from previous research (Elli et al., 2024) to create a network graph suitable to understand thematic areas, correlated services, and more relevant types of providers. The research highlights 12 clusters of interconnected services that address different aspects of clothes distribution, from circular economy pragmatic aspects (e.g., repair, resale), to technological innovations (e.g., the DPP), and to cultural and educational contributions (i.e., workshops, events and communities). The adoption of more pronounced circular economy business models in production will impact retail businesses, which have the opportunity of keeping competitive by leveraging strategic relationships with a variety of stakeholders. Such partners appear to be active in both environmental and social areas of sustainability, and additionally, they can activate educational and cultural events to increase customer engagement.

The analysis reveals that the initiatives available to retailers are diverse and extend beyond the application of circular economy principles. In particular, they include opportunities related to offering experiences aimed at engaging and educating consumers. Additionally, it becomes clear that non-profit organizations play a crucial role, as they implement essential initiatives for the circular economy. The research confirms statements that suggest retail to continue develop pleasant immersive customer experiences (Alex-

ander & Varley, 2025) and educational offerings (Matheny, 2023) framing those in opportunities derived from circular business models. Additionally, they can help streamline different stages of circularity, creating new collaborations when not existing yet.

Two key aspects remain unaddressed in this study. The first concerns the quantity and updating of data: despite an extensive case study selection process, the extent to which it accurately represents the market remains unclear. The case study research, as is often the case (Yin, 2014), was designed to inquire the variety of sustainable initiatives without taking into consideration statistical significance, and stopped once saturation is reached, namely when authors couldn't identify novel examples. Potential gaps may arise due to miscommunication by providers, who sometimes experiment with a service without explicitly listing it on their websites. A more systematic and comprehensive data collection effort could enhance the study: not necessarily to identify additional service templates, but to better capture the providers' offerings and to better represent relationships among identified service templates. The second aspect pertains to revenue, specifically the apparent economic advantage of adhering to linear economy principles. A cost-benefit analysis, encompassing both economic and social dimensions, could provide valuable insights to accelerate the transition by leveraging key stakeholders.

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The Resilience of Informal Trade: Lessons for Sustainable Retail Design

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Abstract: Informal retail demonstrate resilience in the way they adapt to economic instability through spatial organisation, maximising limited resources and fostering strong community connections when creating functional retail spaces. This paper explores the lessons that formal retail design can learn from informal retail environments, particularly in contextual influences, spatial organisation, structural approaches and material selection as they align with the three pillars of sustainability: environmental, economic and social. In Eswatini, a small, landlocked country in Southern Africa, informal traders successfully operate with minimal resources in their communities. Using a case study approach supported by observational analysis and photographic documentation of publicly accessible spaces, the research highlights the role of adaptability, flexibility, locally sourced materials and community integration in shaping resilient retail spaces. The findings contribute to sustainable retail design discourse by illustrating how informal trade environments balance practicality, affordability and cultural relevance. While the study is limited in scope to specific informal retail structures, it highlights valuable lessons for formal retail design. Informal retail design practices can teach us lessons in adopting more adaptable, resource-efficient and socially inclusive strategies. This is particularly true in contexts where sustainability and affordability are critical considerations.

Keywords: Informal retail design, Sustainable retail design; Community-centred design, Adaptive architecture; Spatial adaptability

1. Introduction

Sustainability in retail design is increasingly important, as there are concerns about depleting resources, degrading environments, and social equity. Informal retail spaces present a unique opportunity to explore sustainable practices that integrate environmental, social and economic factors (Buehler, 2024; Magidi, 2022). These retail spaces often demonstrate low-cost, ingenious approaches to sustainability that remain contextually

sensitive. Typically designed by local entrepreneurs who operate with resource constraints, informal traders manage to create functional, engaging and adaptable retail environments. Their approaches can offer valuable lessons to consider and revisit when designing formal retail spaces.

Often unnoticed in design discourse, informal retail environments are essential to many sub-Saharan economies (Mwamba & Qutieshat, 2021). This is particularly true in Eswatini, where a significant portion of the population relies on informal trade to access goods and employment (Social Impacts in the Informal Economy, 2023). Informal trade's evolving nature allows for responsiveness to consumer needs often lacking in conventional retail trade. In addition, informal traders' ability to maximise space efficiency and repurpose materials while fostering strong connections with the community highlights an alternative approach to sustainability that prioritises economic resilience and environmental responsibility (Mills, 2012; Peel, 2015). This study examines informal retail spaces from a sustainability perspective to give insight into the strategies that make them adaptive and inclusive.

This study explores the resilience of the informal trade in Eswatini, a landlocked country in Southern Africa with a significant informal economy that plays a crucial role in the livelihoods of the communities and local commerce. Informal trade in Eswatini ranges from street vendors to market stalls, which often operate in resource-constrained environments. The study aims to identify key design principles that align with the three pillars of sustainability: environmental, economic and social. It will examine how informal traders navigate resource limitations while fostering community engagement, using a case study approach supported by photographic documentation.

Informal retail spaces demonstrate resilience and ingenuity that can inform the global shift to a more sustainable and human-centred approach to retail design. This study positions these spaces as valuable case studies for responsible and adaptable retail design rather than viewing these environments as temporary or inferior to formal retail developments. By gaining insights from the informal sector, retail designers can develop more inclusive, adaptable and sustainability-oriented retail strategies that support economic resilience and sustainable environmental practices.

2. Theoretical Perspectives and Research Design

2.1 Theoretical Framework

The study is grounded in sustainability theories and informal economic principles to analyse the function of informal retail spaces. These theoretical perspectives inform the study's approach to understanding the resilience of informal retail spaces where they must adapt to changing consumer needs, using low-cost materials and construction methods while employing socially responsible retail design practices, particularly in resource-constrained settings.

A core principle of this study is sustainability, and the data is analysed using Elkington's Triple Bottom Line (TBL) framework (Elkington, 1994). TBL evaluates sustainability over

three intersecting dimensions: economic (profit), social (people), and environmental (planet). This study adopts these dimensions to evaluate the balance between financial viability, community well-being and ecological responsibility in informal retail design.

Typically, informal retail spaces demonstrate sustainable principles by using local resources, fostering community-driven economies and creating accessible retail environments. This ability of informal trade to remain economically viable while employing low-cost construction methods aligns with sustainable design models (McDonough & Braungart, 2002). TBL dimensions intersect in sustainable retail location decisions, with economic factors playing a key role in driving social and environmental considerations. A study by Asante-Darko, Osei and Agbodjah (2024) highlights causal relationships between the dimensions and provides strategic insights for achieving sustainability in retail location selection.

Furthermore, the cradle-to-cradle design approach by Braungart and McDonough (2009) further underpins the study. The cradle-to-cradle philosophy that promotes a circular economy highlights the creation of closed-loop systems where materials are continuously repurposed. The concept reduces waste and avoids environmental degradation. Informal traders often employ cradle-to-cradle principles by repurposing salvaged materials. This demonstrates an intrinsic circular economy in their design practices. The ability of informal traders to create adaptable, low-cost construction methods to build retail spaces that evolve with their and their consumers' changing needs demonstrates sustainability.

The study also draws on theories related to the informal economy, particularly on how informal economic practices contribute to the economy (Sarker, Munerah, Yinyi, Kasem & Hoque, 2024). In the context of developing countries, the informal sector is more than a survival strategy. It is a significant economic driver integrated into formal economies, filling gaps in accessibility, affordability, and responsiveness to local needs. Informal and formal sectors don't exist separately but coexist in a complex system of interdependence (Molony, 2005; World Bank, 2019). Informal structures adapt or reconfigure, sometimes to existing infrastructure, demonstrating the informal trade's resilience and responsiveness to socio-economic conditions.

The theoretical framework integrates sustainability, informal economy principles, interiorism and ephemerality to provide an understanding of informal retail spaces. These structures challenge traditional notions of permanence and formality, offering adaptable, low-cost, and socially responsible retail solutions. By analysing informal retail spaces through these lenses, the study contributes to the discourse on how retail designers can develop more inclusive, adaptable and sustainability-oriented retail strategies that support economic resilience and sustainable environmental practices.

2.2 Research Aim and Objectives

The resilience and adaptability of informal retail spaces present a model for sustainable retail design. Informal traders in Eswatini operate in resource-constrained environments, yet they demonstrate innovative approaches to strategies that align with sustainability principles. The informal retail spaces are shaped by necessity because informal traders

rely on locally available materials, flexible spatial arrangements and strong community engagement to establish viable retail environments. The study aims to gain insight into sustainable retail design in informal and formal contexts by examining how these informal traders navigate changing economic and environmental challenges. The following objectives guide the study to achieve the research aim:

- Defining sustainable retail design
Sustainability in retail design incorporates environmental, economic and social dimensions. The objective is to define sustainable retail design by drawing from established frameworks such as the triple bottom line (Elkington & Rowlands, 1999), which considers people, planet, profit, and additional frameworks such as cradle-to-cradle design (Braungart & McDonough, 2009). Understanding these principles provides a foundation for evaluating the sustainability of informal retail spaces.
- Examine how informal retail spaces promote sustainability.
Informal retail spaces function as adaptable, resource-efficient environments that rely on locally available materials, flexible spatial arrangements and strong community engagement to establish viable retail environments. This objective explores how traders achieve sustainability using low-cost materials, repurposing existing structures and fostering strong community ties. The study considers how these spaces operate under constraints while creating socially inclusive marketplaces.
- Investigate the relationship between informal and formal retail spaces.
While informal retail environments are often regarded as temporary or marginal, they offer insights that can inform formal retail design. This objective examines the intersections between informal and formal retail by identifying design strategies that can be adapted to create more sustainable and flexible formal retail spaces. The study contributes to discussions on sustainable retail practices by connecting these two retail models.
- Recommend strategies to incorporate informal retail principles into formal retail design practices.
The final objective is to translate key lessons from informal retail into actionable recommendations for formal retail design. By understanding how informal traders navigate spatial and material limitations, designers, architects, and urban planners can adopt innovative approaches that enhance sustainability in commercial retail environments. These recommendations aim to support the development of adaptable, low-cost, and socially responsible retail spaces.

Through these objectives, this study aims to contribute to the broader discourse on sustainable retail design by offering practical insights that can inform informal and formal retail environments. The paper will highlight opportunities for retail design that is economically viable, environmentally responsible and socially inclusive by extracting from the ingenuity of informal traders.

2.3 Methodology

The study employs a qualitative research approach using a case study method to explore the design aspects of informal retail structures in Eswatini, where informal commerce is a

dominant economic activity. The methodology allows an in-depth understanding of the relationship between sustainability and informal retail environments by analysing how informal traders construct, adapt and sustain their retail environment with limited resources. The research integrates primary and secondary data sources to analyse informal retail spaces and their alignment with sustainable retail design principles.

Case studies are useful for exploring real-world phenomena (Yazan, 2015; Yin, 2009) where multiple factors influence sustainability in retail design. Eswatini was selected as the case study based on its rich landscape of informal trade, which reflects broader trends in Southern African markets while maintaining unique socio-economic and cultural dynamics. The selected route passes through diverse landscapes that include agricultural and forestry industries and urban and rural areas. This study will examine informal retail spaces in context, structural characteristics, materials, and spatial function. Using field observations and photographic documentation, the study will capture these functional and physical elements to highlight adaptive strategies and the resourcefulness of informal retail environments.

Primary data collection

Site visits were conducted between Mbabane and Sandlane, east of Eswatini. Photographs were taken during site visits to visually document design strategies and material applications to provide real-world examples of adaptable, low-cost, and community-driven retail solutions. Table 2 presents the key characteristics observed in informal retail spaces and the guiding questions that informed the analysis. The questions ensure a systematic and structured approach to observing the context, structure, spatial adaptability and materials of the informal retail spaces.

In addition, semi-structured interviews were conducted with informal traders to gain insights into their design decisions and the challenges they face. The interviews explored the factors that influenced their choice of materials and construction methods, how they adapted the retail spaces to meet environmental and economic challenges, and the role of the community in shaping the retail environments.

Secondary data collection

Secondary data was collected through a literature review to contextualise the findings in the current discourse on sustainability and informal retail trade. Literature sources included studies on sustainable retail design, informal economies and their contribution to urban development. Limitations exist in the application of the results. The literature was not exhaustive and focused mainly on studies based in Africa. A study that compares the results with global informal trade will be advised before the results are accepted as final.

Data analysis

The study systematically analysed the collected data using artificial intelligence (AI) to enhance objectivity and consistency in assessing the structures. AI (ChatGPT) generated preliminary observations, which the researcher critically reviewed and contextualised within the research framework. The themes emerged from the Triple Bottom Line (TBL) sustainability dimensions: economic (profit), social (people) and environmental (planet).



Figure 1 Map of Eswatini showing case study sites

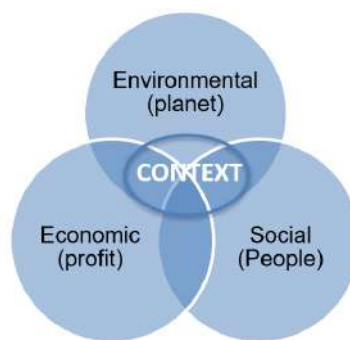


Figure 2 Framework for evaluating Sustainability in Retail Design: Aligning themes with the Triple Bottom Line

However, this study introduces context as a fourth theme, recognising its fundamental role in analysing real-world case studies (Figure 2). Context shapes the interactions between the three sustainability dimensions—economic, social and environmental—by influencing material availability, spatial constraints, regulatory frameworks and cultural practices. Moreover, in informal retail, where adaptability and resourcefulness are critical, understanding the context will provide a more holistic evaluation of sustainable retail design, thereby bridging the gap between informal and formal retail environments.

Table 1 Alignment of themes with the Triple Bottom Line (TBL) dimensions

Theme	Environmental (Planet)	Social (People)	Economic (Profit)
Context	Minimise ecological disruption & integrate with natural surroundings.	Enhance cultural relevance & accessibility to encourage social inclusion.	Support local economies through strategic site selection & accessibility.
Structure	Use resource-efficient construction methods & durable materials.	Ensure safety, resilience & usability for occupants.	Balance affordability & long-term maintenance costs.

<i>Spatial</i>	<i>Promote adaptable & energy-efficient layout.</i>	<i>Enhance user experience & community engagement.</i>	<i>Support economic activity through flexible & functional retail spaces.</i>
<i>Materials</i>	<i>Reduce environmental impact through sustainable sourcing & longevity.</i>	<i>Encourage health & well-being with non-toxic, locally sourced materials.</i>	<i>Support local economies by prioritising regional supply chains.</i>

Table 1 aligns these themes with sustainability principles, demonstrating how retail design decisions influence environmental, social, and economic sustainability. The study builds on these themes and considers how these themes manifest in informal trading spaces. Table 2 outlines the characteristics of such spaces and provides guiding questions for analysis as a structured approach to evaluating sustainability within the context of retail design. These interconnected themes provide a comprehensive lens to assess sustainable design in resource-constrained environments.

3. Findings

The study structured the data analysis around four key themes to examine informal retail spaces. The themes link directly to sustainability principles and align with the Triple Bottom Line (TBL) of environmental, social, and economic sustainability. They include context, structure, spatial organisation and materials. Context focuses on the interaction of the informal trade structures with their surroundings and communities to allow for its integration without disrupting ecological and cultural systems. Structure addresses the viability and durability of construction that support economic and environmental sustainability. Spatial organisation considers the usability and adaptability of the structures within informal retail spaces. Space is most effective when it supports social well-being and maximises economic potential. Lastly, materials relate to sustainability and longevity of resources, evaluating how choices impact cost efficiency and environmental responsibility. The themes intersect and are interconnected, providing a framework for evaluating sustainable design in resource-constrained environments. Table 3 provides the comparative analysis of the 12 informal trading structures documented on the route between Mbabane and Sandlane, in Eswatini.

Table 2 Characteristics of informal trading spaces and guiding questions for analysis.

Category	Criteria	Guiding question
Context	<i>Environmental consideration:</i>	<i>Do the construction methods and materials cause ecological disruption?</i>
	<i>Site integration:</i>	<i>Does the structure integrate with its natural surroundings.</i>
	<i>Cultural relevance:</i>	<i>Does it reflect local traditions or societal values?</i>

	<i>Social inclusion:</i>	<i>Does it foster a sense of belonging & encourage engagement for diverse community members?</i>
	<i>Community integration:</i>	<i>Does it support the local economy?</i>
	<i>Accessibility:</i>	<i>Does it allow easy access to diverse community members?</i>
Structure	<i>Construction feasibility:</i>	<i>Is the structure practical to build?</i>
	<i>Material-structure relationship:</i>	<i>Are materials used effectively?</i>
	<i>Safety and usability:</i>	<i>Is the structure suitable and safe for the intended use?</i>
	<i>Innovation:</i>	<i>Are there unique structural solutions to aid affordability?</i>
	<i>Longevity:</i>	<i>Does it appear durable over time?</i>
Spatial	<i>Adaptability:</i>	<i>Can spaces adapt to changing needs?</i>
	<i>Energy efficiency:</i>	<i>Is the structure energy efficient?</i>
	<i>Light and ventilation:</i>	<i>Are spaces well-lit and ventilated?</i>
	<i>Circulation:</i>	<i>Is movement through spaces fluid and logical?</i>
	<i>Spatial experience:</i>	<i>Does it evoke emotions or provide sensory value?</i>
	<i>Community integration:</i>	<i>Does it promote local economies?</i>
Materials	<i>Sustainability:</i>	<i>Are materials responsibly sourced?</i>
	<i>Durability and maintenance:</i>	<i>Are they long-lasting and easy to maintain?</i>
	<i>Aesthetic quality:</i>	<i>Do materials enhance visual appeal?</i>
	<i>Healthy environment:</i>	<i>Do the structure & materials pose health risks?</i>
	<i>Craftsmanship:</i>	<i>Does the supply support regional economies?</i>

Table 3 Comparative analysis of structures relating to identified themes

Context	
Environmental Consideration	Structures range from totally open-air (umbrella stalls) to semi-enclosed (wooden or metal kiosks). Some are fully exposed to the elements, while others offer partial protection.
Site Integration	Some are positioned on sidewalks or road edges (umbrella stalls, crate kiosks), while others are embedded in designated informal market spaces. More permanent stalls are integrated into existing commercial nodes.
Cultural Relevance	All structures reflect local trade needs—selling fresh produce, poultry, or small goods—indicating a reliance on daily cash flow and community-based commerce.
Social Inclusion	Smaller, mobile setups (umbrella and crate kiosks) cater to quick transactions, while larger, more permanent stalls foster community interaction and repeated customer engagement.
Community Integration	Some function independently, while others are clustered within a designated market area, indicating varying degrees of local economic integration.
Structure	
Construction Feasibility	Mobile stalls (umbrella-based, crate setups) are easy to assemble and relocate, while fixed wooden and metal kiosks require more investment and permanence.
Material-Structure Relationship	Basic materials like wood, metal sheets, and plastic dominate. Some structures use repurposed materials (e.g., old vehicle parts, shipping crates), showcasing ingenuity in material use.
Safety and Usability	Varies significantly—some structures are highly unstable in bad weather, while wooden and metal kiosks offer sturdier protection. Open setups may lack security for products overnight.
Innovation	Most structures show resourcefulness, with makeshift roofing, adaptable shelving, and collapsible elements for mobility. Permanent stalls feature more defined layouts.
Longevity	Mobile stalls are short-term solutions requiring frequent maintenance, whereas metal and wooden structures last longer but need periodic reinforcement.
Construction Feasibility	Mobile stalls (umbrella-based, crate setups) are easy to assemble and relocate, while fixed wooden and metal kiosks require more investment and permanence.
Spatial organisation	
Adaptability	Mobile structures (umbrella setups, chicken crates) offer maximum flexibility, while permanent kiosks provide dedicated spaces but require licensing or local approval.
Energy Efficiency	All structures rely on natural light and ventilation. No energy consumption observed, making them highly sustainable in this regard.
Light and Ventilation	Open-air stalls have optimal airflow, but exposure to heat or rain is a drawback. Enclosed stalls offer shade but may become hot inside.
Circulation	Highly open setups allow customer interaction from all sides, while enclosed stalls direct customer flow through designated entry points.
Spatial Experience	Varies from highly casual (umbrella and crate setups) to more structured and transactional (metal kiosks and wooden stalls).
Adaptability	Mobile structures (umbrella setups, chicken crates) offer maximum flexibility, while permanent kiosks provide dedicated spaces but require licensing or local approval.
Materials	
Sustainability	Most structures use locally available or repurposed materials, reducing costs and environmental impact. Mobile setups are more transient but produce less waste.

Durability and Maintenance	Metal kiosks and wooden stalls last longer but need upkeep (painting, rust prevention). Umbrella setups and crates are fragile and require frequent replacements.
Aesthetic Quality	Some stalls incorporate bright colors or branding (umbrella stalls), while others focus solely on function with no aesthetic enhancements.
Healthy Environment	Outdoor settings promote good air quality but expose products to dust and pollution. More enclosed kiosks offer slight protection.
Craftsmanship	Levels of craftsmanship vary—some wooden stalls show skill in joinery, while repurposed material setups prioritise function over form.

The comparative analysis provides insights into the similarities and differences across all four themes. ChatGPT, an AI language model developed by OpenAI, assisted in generating portions of the analysis, which the author then reviewed and refined. These insights align with each theme.

3.1 Context

The informal retail spaces evaluated in this study indicate they are rooted in their local environments. They adapt to changing economic, social and environmental conditions with ease. Unlike formal retail environments, which often follow standardised design principles, informal spaces respond quickly to community needs and available resources.

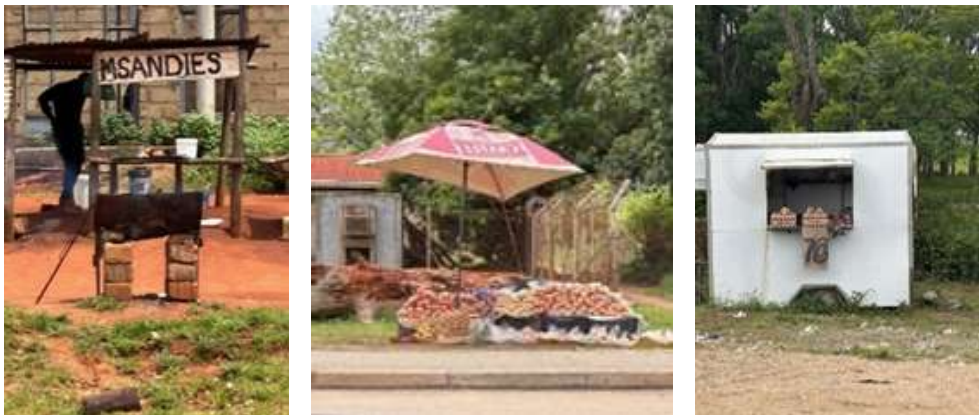


Figure 3 Defining trading spaces in the context of the environments

The structures that define the space range from temporary, sometimes mobile, to more permanent wooden or metal structures. Where the permanent structures provide better weather protection and security, the temporary structures can quickly adapt to fluctuating economic conditions. This aligns with research on informal urban economies (Fourie, Saayman & Blaauw, 2024:10), suggesting that these spaces act as economic stabilisers in resource-constrained environments.

A shared characteristic of informal traders is their role as economic enablers. They often create business opportunities for entrepreneurs who lack access to formal retail spaces. However, there are inconsistencies in how regulations affect these spaces, with some regions supporting informal trade through designated zones. In contrast, some governing bodies discourage it, leading to inconsistencies in the traders' permanence and security.

3.2 Structure

Economic constraints influence the characteristics of the structures in informal retail spaces. This often leads to innovative but low-cost construction methods. Traders improvise and use makeshift structures by repurposing timber, corrugated metal and plastic sheets and containers. This resourceful approach to repurposing materials aligns with vernacular architecture principles and circular economy models, highlighting the repurposing of materials to minimise environmental impact.

The analysis of the structures reveals a trade-off between the adaptability of temporary structures and the durability of the structures (Figure 4). Where lightweight structures are easy to relocate, they are prone to damage due to the weather; more permanent structures provide better protection but require maintenance.



Figure 4 Trade-off between adaptability and durability



Figure 5 Repurposing waste materials

3.3 Spatial Organisation

Spatial organisation in informal retail is hugely adaptable. The adaptability lies in its spontaneous, user-driven layout rather than a pre-planned design. In contrast to formal retail environments where commercial strategies predetermined spatial planning, informal retail spaces develop organically in response to customer interactions and economic demands. They often optimise their layouts for maximum visibility and accessibility, often clustering based on product type, seasonal demand or pedestrian flow. Correspondingly, informal markets rely strongly on modular and reconfigurable designs. Many traders use collapsible tables, mobile carts, temporary partitions and stacked plastic or cardboard containers to modify their retail spaces quickly.

3.4 Materials

Informal retail spaces optimise resource efficiency using locally sourced and recycled materials. Traders commonly repurpose waste materials such as discarded wood, metal sheets and plastic containers to construct retail spaces and displays (Figure 5). This approach reduces material costs while supporting sustainable construction by reducing carbon emissions from transportation and promoting circular resource use.

The low-tech approach to environmental sustainability is significantly different from formal retail design. Informal traders rely on passive cooling, natural lighting and rainwater collection to manage environmental conditions, whereas formal retail spaces rely on energy-demanding systems for temperature regulation and artificial illumination. The weather resilience of materials affects informal retail spaces. Some informal traders incorporate waterproofing and reinforced structures, while others remain vulnerable to harsh weather conditions. The latter results in frequent repairs to the informal retail spaces, resulting in material wastage.

The study found that informal retail spaces exemplify sustainability, adaptability and social inclusion and can provide lessons for formal retail design. Their efficient use of local materials, flexible spatial organisation and community integration offer insights for formal retail designers who want to create a more sustainable and resilient environment. Formal retail spaces can improve their adaptability, sustainability and community engagement by taking lessons in informal trade.

4. Discussion

The findings from the study provide insights into the adaptability of spatial organisation and interaction with customers, affordability due to economic constraints, and sustainability through environmental adaptability. Retail designers, architects, and urban planners can draw on these lessons to create more resilient and resource-efficient retail environments that respond to contextual challenges while maintaining some aesthetic and functional integrity.

This study provides examples of innovative solutions for adaptability, low-cost construction and community integration, all of which apply to formal retail design. Where formal retail spaces focus on permanence and controlled environments, informal trade demonstrates the value of flexible layouts and responsive design. Spatial flexibility allows traders to modify the spaces according to product availability, customer flow and environmental conditions. Modular structures allow retail spaces to adapt to changing market conditions, ensuring long-term functionality. Furthermore, combining temporary or semi-permanent elements into retail spaces can enhance their ability to serve changing economic and social needs.

The selection of materials and resource efficiency management are fundamental factors to consider in sustainability in retail design. While formal retail spaces often emphasise high-end materials, informal retail environments demonstrate the viability of using locally sourced, low-cost materials without compromising function. Sustainable materials such as recycled timber, corrugated metal, and modular prefabricated components can reduce construction costs and environmental impact. Using material efficiently supports circular economy principles in retail design. This approach reduces waste and promotes long-term sustainability.

Customer experience is a vital component of retail design, and our environments shape consumer engagement and behaviour. Informal retail spaces succeed in their immediate response to consumer needs and rely on direct, unstructured interactions. This engagement with their communities ensures retail spaces are inclusive and culturally relevant. Formal retail design can benefit from participatory design methodologies to ensure they reflect their consumers' values, traditions and needs. Whether through open-plan layouts, communal areas or sensory engagement strategies, incorporating assembly spaces, interactive elements, and culturally significant design features in retail environments can foster a sense of belonging and social cohesion.

Retail design can impact economies. It can support entrepreneurship and sustain local businesses. The low-cost, high-functionality approach of informal trade presents a model

for creating affordable retail environments. Designing cost-effective retail solutions, such as pop-up stores or modular kiosks, enables entry to a market with minimal financial commitment. In addition, this can afford formal retail spaces a way to support economic inclusion by integrating scalable, flexible leasing models in shared spaces to ensure they remain profitable.

Sustainability in retail design extends beyond material selection to include broader design thinking methodologies. Formal retail can integrate passive cooling, energy-efficient solutions and adaptable layouts. Retail spaces with sustainability in mind can contribute to resilience and support global environmental responsibility and resource conservation goals.

Retail designers can develop innovative solutions that merge efficiency with aesthetics. Informal retailers navigate climate, safety and space constraints and provide lessons for developing more adaptable, sustainable, and inclusive retail environments by incorporating flexibility, community-driven design and resource-efficient practices.

4.1 Limitations of the study

The author must acknowledge certain limitations of the study. The case study approach, using photographic documentation, does not capture the full depth of socio-economic and regulatory influences shaping informal trade. The findings are context-specific, and while they provide valuable lessons, their applicability may vary across different geographic, economic and cultural settings.

Applying sustainable principles from informal trade to formal retail presents challenges. Informal retail succeeds because of flexibility, resource-efficient materials and adaptability. Building regulations, zoning laws and corporate retail standards often constrain and limit how informal design strategies can integrate informal strategies into formal retail environments. Formal retail design must balance sustainability with safety requirements. Relying on locally available materials and improvised construction methods may conflict with building codes and commercial construction practices.

Notwithstanding the limitations, the study provides valuable lessons from informal trade that can still inform formal retail design. Formal retail spaces can adopt these sustainable design practices to promote contextually responsive design solutions by integrating adaptable spatial layouts and resourcing materials to reduce waste while fostering greater community engagement.

5. Conclusion

This study highlights the critical lessons informal retail spaces offer for sustainable retail design. It demonstrates how retailers can apply practical and contextually driven design strategies in formal retail contexts that promote resource efficiency, adaptability, community engagement and social inclusion. The informal trade spaces demonstrate that sustainability does not always require advanced technologies or expensive materials; it can emerge through responsive, locally responsive, low-impact solutions that align with environmental, economic, and social priorities.

Formal retail design can take lessons from informal trade environments on the efficient use of materials and adaptive construction techniques. The adaptability of informal retail spaces underscores the importance of flexibility in design, ensuring the retail environment remains resilient in response to economic, environmental and social shifts. The ability of informal trade spaces to modify layouts, repurpose materials and respond to changing economic and social conditions ensures that retail environments remain relevant and sustainable. In addition, minimising waste and environmental impact by employing locally available materials and using adaptive construction techniques can further promote sustainability in formal retail design.

Beyond materiality, community engagement emerges as another essential element of sustainable retail design. Informal retail spaces thrive by fostering close connections between traders, consumers and local communities. This participatory approach strengthens social networks and ensures retail spaces reflect users' cultural and economic needs. Formal retail environments can benefit from adopting similar strategies by prioritising user-centred design, inclusive decision-making processes and public participation.

The study emphasises the economic sustainability of informal retail spaces, particularly in creating holistic, sustainable retail environments that balance environmental responsibility with social well-being and economic prosperity. The affordability and accessibility of these spaces provide opportunities for individuals who may lack the financial resources to operate in formal retail settings. By incorporating affordability considerations into formal retail design, such as flexible leasing models, modular retail units and cost-effective construction techniques, retail environments can become more inclusive and supportive of diverse economic participants.

The research highlights the value of learning from informal retail practices to create sustainable retail environments that balance environmental responsibility with social and economic sustainability. By integrating resource-efficient materials, designing for adaptability, fostering community engagement and prioritising affordability, formal retail spaces can become more resilient and responsive to the evolving needs of society. These insights provide a foundation for future research and practical applications in retail design, contributing to a more sustainable and equitable built environment.

Future research is needed to explore how regulatory frameworks can support the integration of informal sustainability strategies safely and functionally while remaining viable to informal traders.

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Section 3

Digital & Participatory Design Innovation

Focusing on artificial intelligence, immersive environments, and educational processes, this session addresses design and technological innovation in retail. The contributions present tools and methods that support user engagement and the evolution of the shopping experience.

How Digital Transformation Drives Sustainability in Fashion Retail: The “Moda 4.0” Research Project

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Abstract: This paper presents the outcomes of the **Moda 4.0** research project—carried out by the Design_Kind Lab at Politecnico di Bari in collaboration with Emme Evolution S.r.l.—showing how digital transformation drives sustainability in the fashion retail sector. By developing and integrating digital systems and tools for multimedia content creation, distribution, and consumption, the study illustrates how emerging technologies inform new skill sets in product and service design while fostering novel cultural values. The research guides the partner fashion company's digital transition through a structured, multidisciplinary design approach, emphasizing sustainability across products and processes. The project delineates three digital strategies related to technologies: (I) metaverse and virtual worlds, (II) Virtual and Augmented Reality, and (III) Non-Fungible Tokens. Ultimately, the findings highlight that holistic, future-oriented digital strategies enhance creative expression and customer experiences and reinforce environmentally responsible and agile innovation in the fashion industry.

Keywords: fashion retail; sustainability; human-computer interaction; digital fashion

1. Introduction

The increasing hybridization between the physical and virtual world - synthesized in the concept of "phygital" or "extended" reality - is radically transforming the entire fashion system, forcing the redefinition of shared processes, skills, and cultural values (Iannilli & Spagnoli, 2021; Alexander & Varley, 2025). Traditionally, the fashion industry has focused on the material dimension of the garment and its symbolic-communicative value (Barthes, 2013; Calefato, 2021). However, the emergence of innovative digital tools has opened new scenarios in which the design of products and services must extend beyond

physicality to integrate immaterial content and interactions that are also accessible in virtual and immersive contexts (Casciani et al., 2022; Ricci et al., 2023).

This paper is framed within this evolutionary scenario, aiming to explore how the digital transition can foster, within the fashion supply chain, the development of sustainable strategies - both environmentally and socially - and stimulate product and process innovation. We focus on the role of digital systems in supporting all stages of the supply chain, from the creative and conceptualization phase of the garment through industrialized production to the distribution and fruition (hybrid or remote) of the product by multiple types of users. These include stylists, designers, dressmakers, agents and distributors, retailers, end consumers, and potential new users that could be intercepted through targeted communication and marketing strategies.

The complexity of industrialized fashion processes, involving numerous actors with different responsibilities (from material selection to cutting, from packaging to waste management, to name a few steps), highlights how digital technologies and remote interaction modes can affect not only the management of the production process, but also the perception of the garment value and, consequently, its social and environmental sustainability (Bertola & Teunissen, 2018). The possibility of accessing multimedia content related to design, history, and product characteristics, for example, via web platforms, virtual worlds through Virtual, Augmented Reality (VR, AR), and Metaverse, opens unprecedented perspectives in the end-user experience and in building a closer connection with the brand or individual items in a collection.

Within this framework, the **Moda 4.0** project, carried out by the Design_Kind Lab of the Politecnico di Bari in collaboration with Emme Evolution S.r.l., aims to support the company's digital transformation, leveraging the adoption of strategies that include the design of applications that leverage VR, AR, the creation of virtual worlds and Metaverse and finally the use of Non-Fungible Tokens (NFT). A multidisciplinary literature review examines the potential organizational and economic impacts of introducing new technologies and possible monetization and user engagement models.

The structure of the paper consists of four sections. The first reviews related literature, presenting other examples of digital transition in the fashion industry leveraging Metaverse and virtual worlds, VR, AR, and NFT. The second offers a detailed analysis of the Emme Evolution case study. The third presents the strategies developed for the company that integrate virtual worlds, immersive solutions, and NFT into business processes, assessing the value creation opportunities and operational challenges that must be addressed. Finally, the last section highlights how defining a sustainable approach - understood in both environmental and social responsibility terms - can be a key factor for competitive differentiation, especially in the context of the hybrid fruition of fashion products.

2. Related works

Previous studies partially highlighted the significant contributions of VR, AR, metaverse platforms, and NFT to enhance sustainability in the fashion industry. For instance, Blázquez

quez (2014) demonstrates that VR- and AR-based "try-before-you-buy" solutions decrease the rate of product returns, thereby curbing waste and associated carbon emissions. This observation aligns with Peddie's (2017) exploration of AR in retail contexts, which confirms that immersive interfaces encourage more informed and responsible consumer behavior. Similarly, Murugesan et al. (2024) examine how 3D virtual try-ons and AR applications allow personalized fitting and styling, enhancing customer satisfaction and reducing return rates due to poor fit or unmet expectations.

Metaverse-based initiatives further complement these advantages by offering entirely virtual venues for product display, social interaction, and live events, diminishing the need for physical samples and on-site logistics (Lee et al., 2024). Dwivedi et al. (2022) suggest that leveraging metaverse technologies for interactive retail experiences can lower environmental footprints, reshape stakeholder collaborations, and facilitate the adoption of circular economy principles.

In parallel, NFTs have garnered attention as a mechanism for generating digital fashion assets with traceable ownership rights (Davis et al., 2024). Dowling (2022) highlights that while energy-intensive blockchain processes remain a concern, NFTs represent an opportunity to decouple creative production from physical resource consumption, mitigating waste streams associated with apparel manufacturing. By facilitating authenticated, limited-edition virtual garments, NFTs open pathways to novel revenue models that foreground digital innovation over material goods.

These studies show that immersive technologies and blockchain-based assets can support the fashion industry's transition toward more sustainable models. Despite ongoing interoperability, data security, and energy consumption challenges, focused attention on VR, AR, metaverse platforms, and NFTs offers promising avenues for resource optimization, waste reduction, and consumer engagement. As technical infrastructures evolve, continued research and cross-sector collaboration are essential to realizing the full potential of these digital technologies in fostering a more sustainable and innovative fashion ecosystem.

Some partial results of the research project have been previously published (Di Roma & Scarcelli, 2024; Scarcelli & Di Roma, 2024). In the first study, Di Roma and Scarcelli (2024) examined the role of digital fashion experiences, analyzing the evolution of virtual try-ons and multimedia content in the fashion industry. Their study highlighted how digital transformation reshapes user interaction with fashion products, integrating metaverse applications, avatar-based fittings, and immersive storytelling to redefine fashion's cultural and experiential dimensions. In the second study, Scarcelli et al. (2024) explored the concept of adaptive fashion, focusing on the design and digital development of inclusive outerwear to support users with reduced mobility. Their research investigated digital tools for adaptive clothing, emphasizing parametric modeling and human-centered design to enhance usability and accessibility.

3. Emme Evolution and the Moda 4.0 project

The analysis of Emme Evolution's business reality in the context of the Moda 4.0 project highlights how digital transition and process sustainability can find particularly fertile ground in the padded outerwear sector. Headquartered in Martina Franca, in the Itria Valley, Emme Evolution has been in the Business-To-Business (B2B) market since the late 1990s. Over the years, it has developed significant expertise in producing down jackets and parkas, focusing on the female audience. The company, which owns several brands (including Pregiò Couture, Nitia, Blue, and Feel), has gained its international reputation thanks to the quality of its fabrics, sophisticated design, and careful processing of shapes and details. In this context, the Moda 4.0 project aims to integrate new technologies and design methodologies within Emme Evolution's processes to enhance the brand's competitiveness further. The study of operational flows - from the creative phase to distribution - allows for outlining digitization opportunities in production and commercial processes and defining more effective customer engagement strategies. The goal is to harmonize the evolution toward virtual platforms and tools with traditional manufacturing and sartorial expertise to promote sustainable and culturally relevant growth for the fashion industry.

As a result of the analysis of the current phenomena and their impact on the fashion world, it was possible to identify three main strategies by which Emme Evolution can innovate its business models from a sustainable perspective (see Figure 1):

1. Strategy involving the creation of virtual worlds and metaverse.
2. Strategy concerning applications integrating digital technologies such as VR and AR.
3. Strategy that exploits the creation of NFTs.

If implemented in synergy, these three strategies can transform the fashion industry into a more sustainable, digital, and innovative ecosystem, responding to new consumer needs and reducing the industry's overall environmental impact.

3.1 Virtual Worlds / Metaverse

Virtual worlds are computer-generated environments where users can interact with digital spaces, objects, and other users (or players). These worlds are often self-contained, with their own rules and experiences, and are commonly found in online multiplayer games like Second Life. They provide immersive interactions but do not necessarily connect with other digital spaces. On the other hand, metaverses aim to create a broader, interconnected ecosystem of virtual environments where users can seamlessly move between different digital experiences. Unlike virtual worlds, metaverses are persistent, meaning they continue to evolve even when users log out. They often integrate advanced technologies such as VR, AR, and blockchain, allowing for digital ownership of assets through NFTs and cryptocurrencies. Platforms like Decentraland and The Sandbox exemplify this vision by offering a decentralized economy and social interactions that extend beyond traditional gaming. The key difference between the two lies in scope and interoper-

erability (See Table 1). While virtual worlds exist as isolated spaces with predefined functions, metaverses strive to unify multiple digital experiences into one seamless, evolving reality.

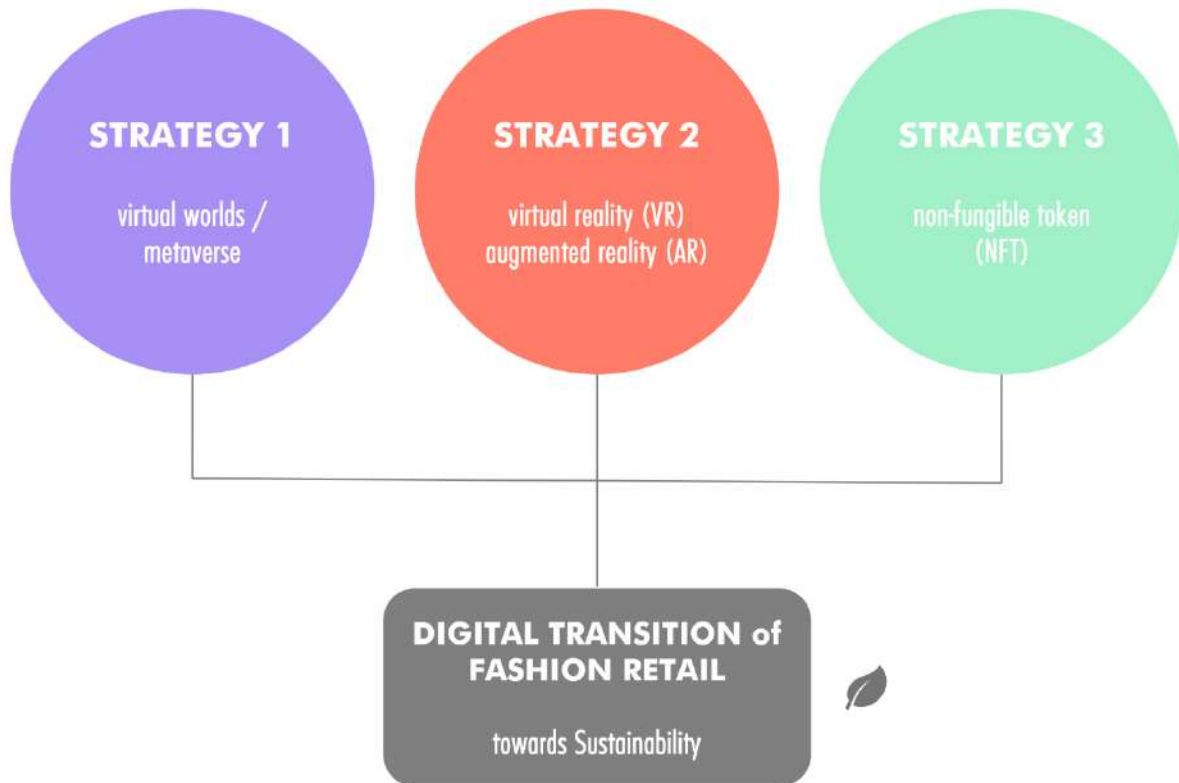


Figure 1 The three strategies implemented for the Emme Evolution digital transition

Interoperability refers to the ability of different digital environments, platforms, and systems to seamlessly interact, exchange data, and function together without compatibility barriers. On the one hand, it enables users to move between virtual spaces while retaining their digital identities, assets, and experiences. On the other hand, in the metaverse, it allows for integrating diverse virtual ecosystems, ensuring that avatars, virtual goods, and services can operate across multiple platforms rather than being confined to a single, isolated virtual world. Embracing metaverses and virtual worlds is one of the most innovative solutions to reduce the fashion industry's environmental impact (Periyasamy & Periyasami, 2023). Through digital environments without space and time constraints, brands can create interactive shopping experiences, removing the need for physical space and reducing the production of material samples.

Despite the limitations with respect to the quality of experience, engagement, and impact on users versus physical experiences, virtual fashion shows and digital showrooms allow consumers to explore new collections without needing physical travel, thus reducing CO₂ emissions related to logistics and in-person events (Carrillo et al., 2014). In addition, the metaverse offers opportunities for personalized engagement, allowing brands to

interact directly with customers through avatars and digital spaces, enhancing the customer experience and encouraging conscious consumption. We report on the main features and advantages of virtual worlds and metaverses below:

- **Immersive experiences:** Creating virtual worlds or integrating garments into gaming platforms offer new modes of engagement, amplifying brand visibility.
- **Digital collections:** Garments can exist exclusively in virtual environments, avoiding physical production while increasing consumer interest and the perception of exclusivity.
- **Community and loyalty:** Participation in games and virtual worlds fuels the emergence of communities of fans, fostering brand loyalty and spontaneous sharing of content.

Table 1 Main differences between “virtual world” and “metaverse” (Dionisio et al., 2013)

Feature	Virtual Worlds	Metaverses
<i>Scope</i>	Self-contained digital space	Interconnected digital ecosystem
<i>Persistence</i>	May reset or restart	Persistent and continuous
<i>Interoperability</i>	Usually closed ecosystem	Designed for cross-platform integration
<i>Economy</i>	In-game purchases but limited portability	Uses blockchain, NFTs, and digital ownership
<i>Technology</i>	Often, just a 3D environment	Integrates VR, AR, AI, and decentralized tech

Considering the contribution of these kinds of experiences to sustainability, virtual worlds, and metaverses contribute to it through many actions:

- **Reducing logistics and physical sample collections:** Events, fashion shows, and virtual showrooms can replace (or supplement) traditional ones, limiting emissions and waste materials.
- **Real-needs-oriented innovation:** Testing new collections or ideas before moving to production enables timely feedback to be gathered, preventing disliked products from entering the market.
- **Consumer education:** Virtual worlds and games provide an innovative channel for raising awareness of environmental and social issues, thus promoting more conscious consumption.

3.2 Digital Technologies (VR, AR)

Digital technologies such as VR and AR are revolutionizing the fashion industry through advanced try-before-you-buy solutions (Wu & Kim, 2022; Alexander & Rutter, 2022). With

VR, consumers can enjoy an immersive shopping experience, exploring collections in realistic digital environments, while AR allows them to virtually try on garments and accessories directly from their smartphones. These technologies significantly reduce returns, a significant problem in online fashion, thereby decreasing waste and emissions from reverse logistics. In addition, VR and AR offer new possibilities for on-demand manufacturing, avoiding overproduction and promoting a more sustainable approach to product creation and distribution. Below, we outline the main features and advantages of these technologies:

- **Virtual garment testing:** AR and VR allow customers to digitally "wear" products, improving online shopping experience and reducing returns (Vangi et al., 2024).
- **Digital design and prototyping:** The use of advanced 3D modeling and simulation software (e.g., Unity 3D) together with artificial intelligence (AI) allows for optimization of the creative phase, reducing errors and fabric waste in sample collections (Ricci et al., 2023).
- **Advanced customization:** Using parametric technologies, consumers can configure the garment to measure (size, color, details), reducing mass production and the need for extensive inventories (Vangi et al., 2023).

These technologies have a substantial impact on sustainability, as they have the potential to trigger a range of positive environmental implications:

- **Decreased returns and unnecessary deliveries:** With virtual try-ons, consumers make more informed choices, lowering the environmental costs of shipping and reverse logistics.
- **Resource optimization:** Digital prototyping, simulation, and predictive analytics reduce material and energy waste, promoting more focused and flexible manufacturing.
- **Supporting the circular economy:** Immersive technologies can facilitate redesign and upcycling processes, integrating new eco-friendly solutions within the entire value chain.

3.3 NFT

NFTs are emerging as one of the most promising solutions for combining digital innovation and sustainability in the fashion system. NFTs enable brands to create digital fashion collections with unique and certifiable properties via blockchain, reducing the need for physical production and limiting the waste of resources. The ability to buy, trade, and collect digital clothes offers new perspectives for the fashion market, where authenticity and exclusivity are key elements. However, it is crucial to address the issue of blockchain energy consumption by developing solutions with low environmental impact. In addition, NFTs can support innovative business models such as digital resale and integration with the metaverse (Alexander & Bellandi, 2022), incentivizing a circular economy based on

digital creativity rather than physical mass production. The adoption of NFT for the fashion industry presents the following main features and benefits:

- **Transparency and traceability:** Through NFTs, a 'digital passport' can be associated with each garment, certifying its origin, materials, production processes, and even level of environmental impact.
- **Authenticity and certification:** NFTs guarantee the authenticity and unique ownership of a physical or digital garment, reducing the risk of falsification and strengthening customers' trust in the brand.
- **Digital fashion:** The creation of exclusively digital garments usable in the virtual environment (e.g., for avatars or virtual collections) allows new forms of creativity to be experimented without the impact of additional physical production.

Regarding the impact that NFTs have on sustainability, below are the main implications:

- **Waste reduction:** The ability to validate market interest by selling NFTs before starting physical production (so-called "on-demand production") prevents the accumulation of unsold stock.
- **Traceability of the entire supply chain:** Clear and immediate information on the stages of the production chain promotes a more responsible value chain, enabling continuous improvement choices in terms of materials and processes.
- **Virtual design valorization:** Experimentation with digital garments can offer economic returns without the energy and resource waste typical of traditional manufacturing.

4. Case study

We report on a case study developed for Emme Evolution demonstrating how virtual worlds and metaverse-inspired experiences can enhance brand storytelling and cultural identity by following Strategy "1". Integrating three distinct VR scenes to evoke the symbolic connection between Emme Evolution and the Apulia region project leverages digital environments as immersive storytelling tools. Using Cinema 4D and Unity3D, the research team recreated a traditional Lecce stone courtyard, a rural landscape with trullo and Mediterranean vegetation, and a coastal scene with cliffs, sand, and a lighthouse at sunset. These settings reflect the company's heritage and place their coats in recognizable cultural and natural contexts.

The VR visualizations of Emme Evolution's capsule collection, set within the immersive Apulian scenarios, provide a sustainable and innovative solution tailored to the company's B2B model. As a business that designs, produces, and sells coats to other businesses rather than directly to consumers, Emme Evolution benefits from virtual showrooms that allow potential buyers to explore the collection remotely without needing

physical samples or in-person meetings. The three VR scenes showing the garments within culturally and geographically meaningful Apulian landscapes—offer an engaging and immersive way for retailers and fashion buyers to visualize the collection within a rich narrative context. This digital approach reduces the dependency on traditional sample production, often leading to material waste and high transportation costs. Emme Evolution minimizes the carbon footprint associated with international trade shows, physical showroom setups, and logistics-heavy sales cycles by enabling clients to evaluate designs, textures, and aesthetics within a fully interactive digital environment. Integrating VR visualizations into the B2B sales process enhances efficiency, cuts costs, and aligns with sustainable business practices, showcasing how metaverse-inspired solutions can revolutionize the wholesale fashion industry while maintaining a strong connection to regional identity and storytelling.



Figure 2 The three VR scenes displaying the Emme Evolution capsule framed within Apulian settings

5. Conclusions

The Moda 4.0 research project results, conducted by the Design_Kind Lab at Politecnico di Bari in collaboration with Emme Evolution S.r.l., highlight how the digital transition represents a key driver for sustainability in the fashion retail sector. Integrating emerging technologies such as VR, AR, metaverse, and NFTs is redefining production and consumption paradigms, enabling companies to optimize resources, reduce waste, and improve efficiency along the entire value chain.

Through a holistic approach, the project demonstrated how the adoption of digital tools enables not only the development of new skills in product and fashion design but also the promotion of innovative cultural values - through three key strategies related to (1) virtual worlds and metaverses, (2) digital technologies (VR/AR), and (3) NFT. The identified strategies impact four main areas:

- Sustainability of production and waste reduction through digitization of modeling, advanced pattern management, and pattern simulation.
- Evolution toward on-demand and customized production, thanks to three-dimensional scanning and advanced customization, enabling more flexible and responsible production.
- Implementing new consumer models based on digital technologies, with immersive AR/VR experiences and the development of digital fashion assets through NFT, capable of reducing the environmental impact of physical production.
- Digitization and automation of the supply chain improves transparency and logistical efficiency, reducing overproduction and the industry's carbon footprint.
- Emerging findings confirm that holistic, future-oriented digital strategies can strengthen the sustainable innovation and competitiveness of fashion companies by redefining the role of the consumer within the creative and production process. Adopting hybrid business models, in which digital and physical are integrated, improves customer experience and facilitates the transition to a more transparent, responsible, and resilient industry.

However, despite the benefits, digital transformation still presents some challenges related to system interoperability, data security, and the energy impact of digital infrastructure. Therefore, continuous effort is needed to research and develop low-impact technology solutions and increase collaboration between companies, academic institutions, and policymakers to ensure an innovative and sustainable ecosystem.

In conclusion, the Moda 4.0 project shows that digitization is not just a technological opportunity but a structural change that can reshape the fashion industry. The sustainable fashion retail of the future will be increasingly oriented toward a digital, personalized, and low-impact model in which the consumer can actively participate in the design and production of garments, avoiding the waste typical of the traditional industry. On the one

hand, the digitization of the supply chain and the acquisition of new technological skills make it possible to reduce waste and overproduction, improve transparency and traceability of processes, and create innovative shopping experiences. On the other, adopting hybrid business models facilitates the shift toward more conscious and responsible consumption, in line with growing customer expectations and the need for a future-oriented approach to fashion retail, both economically and environmentally.

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The impact of Midjourney on students' design and design process: an exploratory study

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Abstract: We explored the impact of AI, specifically Midjourney, on the retail design process for master's students. Over three years, three student groups followed the same design exercise, with AI introduced at different phases. Group 3, which used Midjourney during concept development, showed increased creativity, stronger storytelling, and more cohesive designs. However, AI had no significant impact on innovativeness or originality. Midjourney did accelerate ideation, allowing students to generate concept boards quickly, reducing early-stage development by 1-2 weeks. Despite this, its use declined in later design phases, as students found it unable to fully align with their visions. The study concludes that Midjourney is most effective in the concept phase, offering fast visualization, lowering technical barriers, and inspiring creative thinking. While it may not replace traditional design methods, it serves as a valuable creative tool for exploring and refining ideas.

Keywords: AI; design process; creativity; retail design

1. Introduction

As researchers and teachers in the Faculty of Architecture and Arts, we have been working for several years to develop tools that facilitate the design process of stores for students. Several tools and models have already been published (Quartier, 2023). Influenced by recent developments in AI, we set up an experiment to explore the possible impact of an AI-tool on the design process. In scientific literature we found sound proof that AI could benefit the design process. Text-to-image AI tools like Midjourney are particularly suited for retail design by accelerating spatial planning, enhancing brand identity, and improving consumer experience. They enable rapid exploration of store layouts, help maintain visual consistency with brand aesthetics and assist in crafting immersive shopping environments. While primarily used for visual inspiration, their ability to generate diverse design concepts makes them valuable for the fast-paced retail industry. In recent years

there has been a lot of focus on appropriately integrating generative AI models into the design process. For example, we see a lot of publications around supporting the concept phase, using language or image generation to explore a broad spectrum of conceptual possibilities. The literature review by Rane et al. (2023) shows that tools like ChatGPT or Bard can play an important role in this, as they can quickly generate different alternatives, taking into account style preferences, color palettes and spatial requirements. A similar conclusion can be drawn based on the user study by Paananen et al. (2023), in which architecture students were asked to use popular models (Midjourney 4, DALL-E 2, Stable Diffusion 1.5) to generate an impression image of a floor plan, an interior and a material. Students particularly appreciated that the models took into account certain conditions (e.g., number of floors or overall size). After the concept phase, several publications explore how initial impressions can be further solidified.

For example, RoomDreaming is a prototype by Wang et al. (2024) that uses image generation to iterate quickly and efficiently over a wide range of suggestions, with the user directing the process by selecting the preference each time. As a result, suggestions in subsequent iterations quickly converge to the user's specific needs. Designers reported after a user study that a first hour of collaborative design via RoomDreaming gave similar results to several days of traditional meetings. Another example is the platform by Thakkar et al. (2024), where users first enter the dimensions of a virtual (3D) space and place objects. Then an interior image is generated that matches the space to a certain extent (in terms of layout, specific furniture, proportions ...). This shows that even with image generation, the algorithm can be somewhat controlled, by enforcing a certain spatial structure. Moreover, the platform also allows objects to be moved or removed. Research also shows how AI can assist designers in later steps of the process. For example, Hou et al. (2024) investigated how color palettes can be automatically determined via a language model supported by domain-specific knowledge, allowing the intent of the designer's textual input to be better ascertained. The colors suggested by the model can then be automatically assigned to parts of the interior (furniture, walls, etc.) and refined by the designer. Generative models such as ChatGPT and DALL-E can also be used for assigning textures and colors in a 3D scene. For example, the prototype of Gallega et al. (2024) uses these models to recommend relevant textures, generate multiple texture maps of the same type of texture, or suggest color palettes. In turn, Merell et al. (2011) developed an interactive system that proposes furniture arrangements that consider interior design guidelines (such as balance, focal points, alignment, and circulation). An informal study found that users with no prior knowledge in terms of interior design knew better arrangements when using the system.

Next, we did an online exploration to look for the tools at hand. There seems to be a breakthrough in generative AI technologies that can support and accelerate creative processes. An important evolution in the landscape of AI and creative design is the breakthrough in generative algorithms. Given the impressive advancements in recent years, this technology is well-suited for translating abstract DNA values—typical terms brands use to define themselves—into immersive visual and sensory shopping experiences. Especially interesting are image models that can convert textual input into an image based

on their extensive training. Tools such as Midjourney, Stable Diffusion, Shutterstock AI Image Generator, DALL-E, Adobe Firefly, ... are available to a wide audience, whether for a fee or not. Such tools already offer many advanced features, such as the ability to manually select and delete specific parts of an image or replace them with an alternative. There are, however, commercial generative AI tools that specialize in interior design. Some interesting players in this field are Spacely AI, AI Room Planner and RoomGPT, which promise users through their AI-based visualization to speed up and streamline the design process, while being cost-effective. They offer users a choice of interior styles, but their customization options remain very limited. These tools often require an initial image or sketch of the existing/desired room, in an attempt to meet the user's needs, but they primarily focus on generating visually appealing images of interiors similar to the user's input. Midjourney is a bit different as it allows users to generate designs by simply describing what they want in words.

After this exploration, we chose the Midjourney programme. Midjourney promises, as an AI-powered image-generation platform, offers students an opportunity to explore and visualize concepts in ways that were previously time-intensive or technically challenging. Also, Midjourney seemed to be easily accessible, offering endless conceptual images of spatial images without giving it a lot of input. So, both for conceptual thinking as store design Midjourney seemed the best fit.

2. Experimental set-up

The study was conducted among Master students of interior architecture majoring in retail design in the academic year 2022-2023, 2023-2024 and 2024-2025, with 2022_2023 as the control group, using no AI. With the retail design process model of Servais et. al (2012) in mind, and what we found in the literature review, two phases in the design process were selected to introduce Midjourney to the students: concept design phase, and the store development phase.

During the first year of the three (2022-2023), no Midjourney was taught nor mentioned to the 6 students following the master (group 1). After a short survey at the end of the exercise, students were found to be unfamiliar with Midjourney or any other AI design tool. During the second year (group 2), Midjourney was taught to 11 students following the master, in the store development phase with the premise that it would inspire the students to elaborate their design. The third year of study, we taught students Midjourney at the beginning of the design process, during the concept development phase (group 3). This year, there were 6 students involved. The Midjourney training consisted of a half-day session, beginning with a brief introduction to the platform. Following this, students were assigned two hands-on exercises to assess their ability to work effectively with the program. The retail design exercise remained consistent over three years: students were tasked with designing a concept store for an internationally recognized luxury brand or designer within a 400 m² space provided to them. They had the freedom to choose their brand, with selections including Louis Vuitton, Dolce & Gabbana, Dries Van Noten, Walter Van Beirendonck, and Rolex. A key focus of the exercise was crafting an immersive shop-

ping experience. Master's students were already familiar with retail design, having completed a semester-long retail design project in their third year of the bachelor's program. During that phase, they followed a structured design process with strict timelines, guided by tutors. In the master's program, however, they had greater autonomy in managing their own schedules. This flexibility allowed us to evaluate whether Midjourney influenced the timing of their design process.

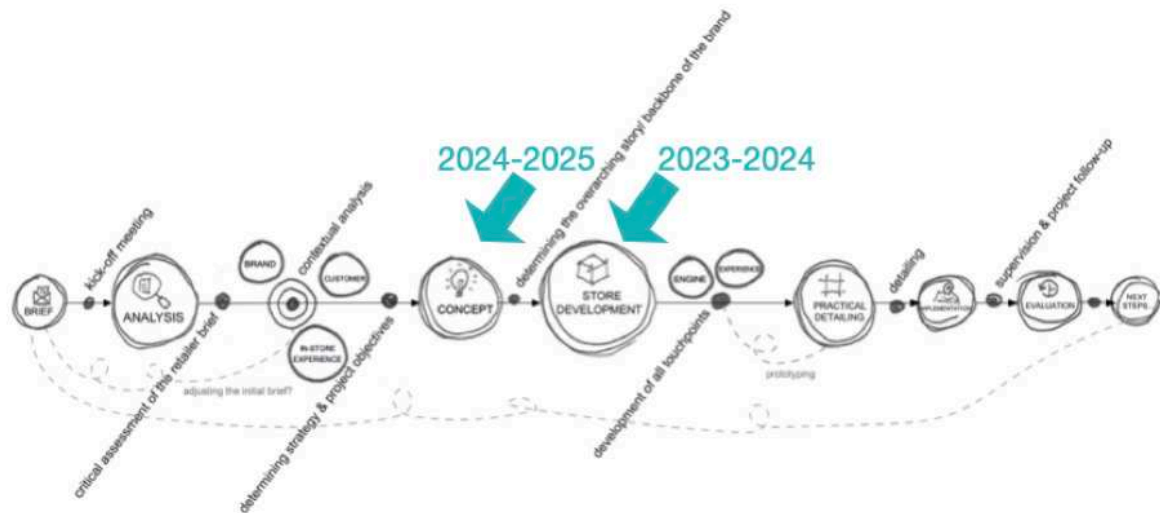


Figure 1 Retail design process with the use of Midjourney indicated in the process

3. Analysis

Over the course of three years, two teachers—a retail design expert and the author—consistently guided the design process. They maintained a stable approach, making no changes to the design exercise or their methods of instructing and mentoring students. This ensured that any variations in student outcomes were not due to differences in guidance but rather to the influencing of the AI-tool used in the process.

The design process was closely monitored in terms of both timing and visual output, using structured documentation (workflow document) and student presentations. To assess the effectiveness and impact of the process, the results were analyzed based on three predetermined criteria:

- Innovativeness – The extent to which the design introduces new and forward-thinking solutions.
- Originality – How unique and distinctive the design is compared to existing solutions in the market.
- Creativity – The depth and meaningfulness of the ideas generated throughout the design process.

By systematically evaluating these aspects, the study aimed to identify the influence of different approaches on the quality and nature of student designs.

4. Results

4.1 Use of Midjourney

Although the students in Group 2 only learned to use Midjourney during the store development phase, many still referred to their concept boards from the concept design phase. Most of them recreated their concept boards using Midjourney (see Figure 2), though these new images were largely copies of their original work, with little further experimentation. During the store development phase, students used Midjourney primarily for inspiration but did not allow it to influence or guide their design decisions. Analyzing their workflow documents at the end of the process revealed that the frequency of Midjourney-generated images remained relatively low.

In contrast, Group 3, which was introduced to Midjourney during the concept design phase, used it extensively to experiment and develop their concept boards. These boards were notably more spatial and interior-focused than those of Group 2 (see Figure 3). Students in this group continuously generated images until they arrived at their ideal concept—an efficient process completed within half a day. However, like Group 2, they rarely used Midjourney in the later design stages, neither for inspiration nor for visualizing their ideas.

During a final review, students in both groups expressed that Midjourney did not always produce the results they envisioned. Many already had a clear mental image of their designs that the AI struggled to replicate. A key difference, however, was that Group 3 tended to keep their Midjourney-generated concept images as a guiding reference throughout the design process, whereas in Group 2, the concept board played a minimal role in further development.



Figure 2 Concept boards of Group 2, Walter van Beirendonck and Nicky Vankets

4.2 Impact on final design

An analysis of the students' results revealed no significant impact on two of the three predetermined evaluation criteria: innovativeness and originality. In other words, the extent to which the designs introduced new solutions, and their uniqueness compared to existing designs remained relatively consistent across all groups. However, there was a noticeable increase in the creativity factor, particularly in Group 3.

In this group, the use of Midjourney appeared to enhance the depth and strength of the conceptual storytelling. The narratives behind the concepts were more compelling, and the overall design concepts were more clearly defined and cohesive. Additionally, the translation of ideas into visual design was more consistent, as illustrated in Figure 3. This suggests that AI-generated inspiration may have helped students refine their ideas more effectively, leading to stronger and more coherent design outcomes.



Figure 3 Student work for Vivienne Westwood, group 3: left-hand side is Midjourney concept board, right hand side is final design

4.2 Impact on design process

The teachers noted that the timeline of the design process varied between groups. In Group 1 (the control group), the initial research and analysis phase lasted seven weeks. During this time, students examined the brand and target audience, culminating in the creation of two personas, a brand analysis using the brand pyramid (author, 2023), and a concept board with accompanying text. This was followed by another seven weeks dedicated to the actual design work.

Group 2 followed the same timeline for both research and design, showing no change in process duration. However, in Group 3, the use of Midjourney accelerated the early stages of concept development. The AI tool provided immediate visual inspiration, allowing students to generate ideas more quickly. As a result, the analysis and concept development phases took less time, reducing the need for the additional one to two weeks that were typically required to create a concept board manually. This suggests that AI-

driven tools can streamline the ideation process by offering rapid visual references, potentially allowing for more time to refine and develop designs.

5. Conclusion and discussion

When designing the exercise, we assumed that Midjourney would serve as a valuable design companion, providing students with limitless inspiration, particularly during the store development phase. However, our research shows that students are more likely to use Midjourney in the concept phase. Somewhat unexpectedly, the program was little used in the later design phase. We can conclude that:

1. **Accelerating Ideation and Visualization in concept design phase:** Midjourney allows students to quickly generate visuals based on textual prompts, which accelerates the brainstorming and ideation phase. This capability enables them to test multiple creative directions in a fraction of the time it would take using traditional methods. For design students, this means they can explore a broader range of ideas, iterate faster, and refine concepts more effectively.
2. **Lowering Technical Barriers:** for students who may lack advanced skills in complex design software, Midjourney provides an accessible way to create professional-grade visuals and boards. This empowers students from diverse backgrounds to engage in creative exploration without being limited by their technical expertise.
3. **Inspiring Creative Thinking:** by generating unexpected or unconventional results, Midjourney often pushes students to think outside the box. The AI's interpretations can serve as inspiration, challenging students to reconsider their assumptions or explore new creative directions.

So, Midjourney could become a powerful companion in the design process for students, offering inspiration, some level of efficiency (producing a lot of images in a short timeframe) and accessibility. We noticed that it is especially useful in the concept generation phase.

6. Limitations

While our study provides valuable insights into the role of AI in the design process, the small sample size (6-11 students per year) presents certain limitations, particularly regarding broader applicability. Beyond sample size, several potential biases could influence our findings: group dynamics and cognitive bias in Perception of AI Assistance. Regarding group dynamics, although students worked individual on their project individual differences, dominant personalities, and peer influence can affect student performance, making it harder to isolate the study's impact. In term of cognitive bias, students' preconceived notions about AI—whether overly optimistic or skeptical—could affect how they engage with the tool. If participants expected AI to be highly creative, they might have relied on it more, whereas skeptics may have underutilized its potential. A more structured approach, such as comparing AI-assisted and non-AI-assisted design processes, could help isolate these effects.

By addressing these biases in future research, we can gain a more nuanced understanding of AI's role in design education and ensure that findings are more broadly applicable.

Overall, a quantitative component, such as larger-scale data collection or statistical analysis, would strengthen the findings by providing more objective insights.

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The Role of Consumers in the Retail Design Process

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Abstract: Marketing and design emphasise consumer-centricity and advocate for a participatory, co-creative role for consumers. However, retail designers often view consumers as constraints with limited influence on store design. A literature review analysing retail design from a consumer perspective reveals three key approaches: brand-based frameworks, which align retail design with brand identity; handover-based frameworks, which incorporate consumer insights in a design brief; and empathy-based frameworks, focused on understanding consumers through iterative design. In these frameworks consumer participation remains minimal. Barriers to greater involvement are largely linked to the role of the designer. The review suggests that a more creative and participatory role for consumers in the design process could lead to more customized, meaningful experiences and make retail spaces more consumer-centric. A proposed 5-level ladder of consumer involvement offers a tool for aligning retail challenges with appropriate levels of consumer participation, enhancing consumer-centric design in retail spaces.

Keywords: Retail design; Consumer-centricity; Co-creation; Participation ladder.

1. Introduction

Since the 1970s, designers have progressively adopted a consumer-centric approach, focusing not only on what they design but also on how they engage consumers (Sanders & Stappers, 2008). Consumers have played a more active role in the early stages of the design process, particularly during idea generation. This emphasis on consumer involvement parallels the evolution of a marketing concept where customer-centricity has become pivotal. In the previous century, many service-oriented firms progressed from a product-centric and internally focused approach to an external focus, serving specific customer segments (Sheth et al., 2000). Advances in technology have since driven this further, enabling a shift from market orientation toward a customer-centric model in which firms prioritize developing and maintaining relationships with individual customers (Guo et al., 2020; Sheth et al., 2000). Consumers increasingly seek to influence all as-

pects of the business system, turning every point of interaction from design and production to consumption into opportunities to create and extract value (Prahalad & Ramaswamy, 2004). This movement toward consumer-centricity in both marketing and broader design disciplines contrasts with the way consumer roles are described in retail design literature. For instance, Münster and Haug (2017) find that fashion store designers underrate consumers compared to other stakeholders and consumer influence diminishes as the design process progresses. In response to this gap, frameworks proposed by Schüller (2020) and Servais (2023) advocate for making retail design more consumer-centric. This shift is important because creating value for customers inherently generates value for retail firms: “the true essence of the customer-centricity paradigm lies not in how to sell products but rather in creating value for the customer and, in the process, creating value for the firm; in other words, customer-centricity is concerned with the process of dual value creation” (Shah et al., 2006 p.115). First, an understanding of the current role of consumers is required before discussing possible more co-creative roles because value creation for consumers may occur without requiring their active participation. Consumer co-creation can be defined as a collaborative approach in which consumers work actively with designers and retailers to achieve shared goals (Bødker et al., 2022). This literature review examines the current role of consumers in retail design. This helps to understand why the consumer’s role in the retail design process is undervalued, despite the pivotal role consumers play in the marketing concept and the widespread adoption of consumer-centric approaches in design. The topic of this study is relevant to both marketing and design disciplines but ultimately it focuses on the retail design process and specifically, on the way one of the stakeholders, consumers, are involved.

2. Research design

A semi-systematic, scoping literature review was chosen to take the process of summarising and disseminating research findings “one step further by drawing conclusions from existing literature regarding the overall state of research activity” (Arksey & O’Malley, 2005 p.21). Systematic reviews aim to evaluate the quality of publications addressing a highly focused research question, whereas scoping reviews seek to identify gaps in the existing literature. This study exhibits characteristics of both approaches. Its systematic nature is reflected in its replicable process, the inclusion of only peer-reviewed publications, and the assignment of characteristics to a selection of publications for analysis. On the other hand, its scoping nature is evident in the broadly rather than narrowly defined research question and the reflexive application of inclusion criteria, which evolved with increasing familiarity with the literature. First, publications were selected that included “store design” or “retail design” and at least one of the following terms: “consumer”, “shopper”, “customer” or “end-user”. The search included a wide range of sources such as Arts & Architecture Source, EBSCOhost, Scopus and Web of Science from their moment of first publication till 1 August 2023. As this resulted in tens of thousands of publications, in a next step the selection was restricted to English and peer-reviewed publications in the academic disciplines of architecture, business, economics and social sciences. Next, the abstracts of these publications were checked for mentions of the retail design process, stakeholders in the design process, and/or consumer participation in the

design process. This generated a first list of 43 publications to which 7 publications were added based on references in the first list. They were read in full to check if they also related to physical stores. The 50 publications were coded based on characteristics of the retail design process, stakeholder types, consumer involvement and key themes, enabling the identification of barriers and accelerators of consumer involvement in retail design. 22 publications in particular contained detailed information relevant to the review.

3. Findings

First, those publications are selected that describe processes in various phases to develop a physical store, hereafter called retail design frameworks. Clustering of such individual frameworks may help to identify the context in which they are effective and enables a discussion at the group rather than the individual level. After reporting on framework typologies, all publications are used to discuss the findings on process, stakeholders, consumer role, barriers and accelerators.

3.1 Frameworks

Retail design frameworks were evaluated on aspects that could inform us on consumer involvement in retail design: the intensity of involvement of the consumer, the timing of the involvement, the actor that invites consumers into the process and finally the actor that is the main driver of the design process. Intensity of consumer involvement is described as low if the consumer assumes the role of informant in one or a few research steps, is characterised as one of the constraints, and/or functions as a trigger of the process. This attribute value is medium if the consumer is perceived as a valuable source of information and inspiration at various steps, not merely as informant in the analytical phase. Finally, intensity is high if the consumer is co-creator in one or more parts of the process and assumes decision-making responsibilities. Timing of the consumer involvement was divided into 3 phases of the process: at the start, in the middle and/or at the end. Both intensity and timing did not result in much differentiation and therefore they are not helpful for grouping frameworks. In all of the identified retail design processes the consumer involvement is low, and if there is any, consumers are observed or interviewed in an analytical phase at the start of the process and as input into the briefing for the designer. However, the models differ in the choice of the actor who leads the overall process and the selection of the actor who carries the responsibility of involving the consumer. When the frameworks are plotted on these two aspects three types of frameworks appear (figure 1): brand-based framework, when the retailer takes the lead; handover-based frameworks when the designer leads the overall process and uses the design brief as handover moment while relying on the retailer for consumer insights; and empathy-based frameworks when the designer leads the process from start to finish, not relying on the retailer. Figure 2 shows the main differences among the 3 types. Interestingly, there is no framework that describes a collaborative process where the retailer leads the overall design process and the designer is responsible for involving consumers. Most frameworks give the responsibility of involving consumers to the retailer.

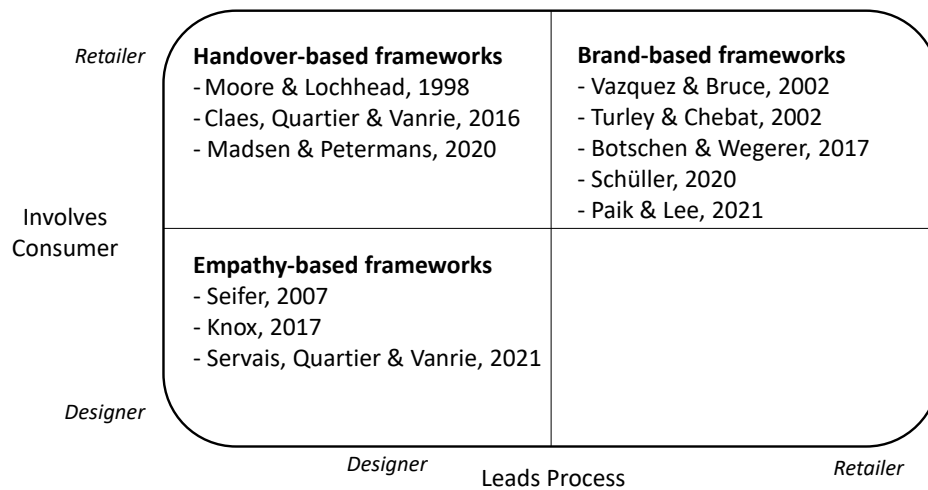


Figure 1 Typology retail design frameworks

3.2 Process

The brand-based frameworks share a strong connection between retail design and the retailer's strategic marketing processes. The process starts with the current brand identity or guides the (re)definition (Botschen & Wegerer, 2017; Paik & Lee, 2021; Schüller, 2020), is harboured in retail strategy (Turley & Chebat, 2002), and/or is a response to consumer demand, retail competition and/or supplier action (Vazquez & Bruce, 2002). The brand-based frameworks suggest a number of sequential steps: determining brand principles, analysing the context, setting retail strategy and translating this into retail design. At the end of the process Turley and Chebat (2002) create a feedback loop from retail design implementation to retail strategy. Botschen and Wegerer (2017) ensure that strategic marketing plans are elaborated in retail employee behaviour, processes and structures.

In handover-based frameworks designers take overall responsibility but call on retailers to present information on the retail context, retail strategy and consumer insights in a design brief. Apart from this, these frameworks differ on many other aspects of the retail design process. Moore and Lochhead (1998) see the design process as an essentially creative response by designers to an actual or perceived problem. Claes et al. (2016) present an iterative, never-ending process.

In empathy-based frameworks designers maintain control and direction throughout the process. The frameworks demonstrate a commitment to gaining a deeper understanding of consumers. Seifer (2007) starts with observational research of consumers, Knox (2016) emphasizes awareness of the consumer situation and further context as a first step, and Servais et al. (2021) rename 'target group' from the framework by Claes et al. (2016) into 'customer'. The frameworks accept continuous adaptation through feedback from monitoring that is incorporated into subsequent iterations. Servais et al. (2021) encourage self-reflection by 'finishing' their process with a next phase called 'Next step...?'. Knox (2016) suggests the designer to lead the process to the end up to guiding the opening of the store and monitoring performance.

	Brand-based	Handover-based	Empathy-based
Takes lead in process	Retailer	Designer	Designer
Involves consumer	Retailer	Retailer	Designer
Guiding principle	Retail brand identity	Connectivity	Continuous improvement
Role of consumer	Trigger, evaluator	Subject of research	Subject of research
Phasing consumer	Start, middle	Start, middle, end	Start, middle
# Stakeholders	High	Low	Low
Main stakeholders	Variety of retailer functions, designer	Retailer, designer	Variety of designer functions, retailer
Framework	Sequential	Sequential, non-sequential, visual	Sequential
Type of journals	Marketing, retailing	Consumer, retailing, design	Design
Timing publications	2002-2021	1998-2020	2007-2021
Main characteristics	Interwoven with retailer strategic marketing process. Implies consumer research.	Retailer informs designer on strategy, context and consumer in design brief.	Desire for deeper understanding of consumer. Emphasises continuous adaptation.

Figure 2 Overview of retail design frameworks

3.3 Stakeholders

Retail design frameworks differ in the quantity, type, and level of detail regarding stakeholder identification, which influences the role of consumers. Brand-based frameworks position consumers as one of many stakeholders. This corresponds with an amended, broader definition of the marketing concept (Gundlach & Wilkie, 2009). In addition, brand-based frameworks encompass various specific retailer functions such as for assortment and social media. In empathy-based frameworks where designers lead the process, specific design roles such as for conceptual and product design are emphasized. Finally, the handover-based framework focuses on the interaction between retailer and designer with little attention given to other stakeholders. Figure 3 provides an overview of stakeholders that are identified in our literature review. This emphasizes the complexity of the retail design process. In addition, it offers a starting point for future analyses of the role of consumers in possible connection with other stakeholders. The structure of the overview follows Kent (2007) which is the first retail design specific overview and has often been used as a basis for subsequent frameworks (see e.g. Schüller (2020)). Stakeholders in the literature review were categorised according to this structure into three types: stakeholders directly involved in the retail design process, stakeholders affected by the retail design process and stakeholders affected by the outcome of the retail design process. In this typology consumers are classified as an indirectly affected group that are affected by the outcome and exert the least impact on the process itself.

Stakeholders directly involved in the retail design process	Stakeholders affected by the retail design process	Stakeholders affected by the outcome of the retail design process
1. Retailer, and more specifically: a. <u>Real estate and building department</u> • Store development/property arm • Store design • Store planning and layout team b. <u>Senior management</u> • Board executives • Department heads c. <u>Commercial department</u> • Assortment manager • Buying and merchandising team • Merchandise planning • Visual merchandising • Expert in food design d. <u>Store operations</u> • Area manager • Local store management • Franchisees 2. Designer (at retailer / design agency) a. Architect / Retail designer b. Conceptual design team c. Design service providers incl. product or packaging designer d. Department heads in architectural practices 3. Consultant	4. Retailer, and more specifically: a. <u>Marketing department</u> • Corporate brand management / Brand owners • User experience design • Social media marketing b. <u>IT department at retailer</u> 5. Store owners / landlords 6. Communication agency a. Below-the-line agencies, e.g., POP, sales promotion, DM, etc.) b. Advertising and other above-the-line agencies 7. Real estate management a. Facility / property management b. Building supervisor c. Property manager d. Project manager of project development e. Owner of mall property f. Retail mall manager	8. Consumer / Customer 9. Store employees 10. Competitors 11. Suppliers 12. Financial community a. (Retailer) Shareholders b. Banks 13. Local community a. Adjacent businesses b. Residents c. Local pressure groups d. Local chamber of commerce 14. Government a. National legislators and government b. Local legislators and government c. Town planners d. Local planning authorities 15. National and local media 16. Political groups 17. Trade associations 18. Activist groups 19. Historians

Figure 3: Stakeholders by involvement

3.4 Consumer role

In brand-based frameworks retailers operate with the consumer in mind, but they regard the consumer as a target that may trigger the start of the process by the retailer (Vazquez & Bruce, 2002) or evaluate the outcomes. Turley and Chebat (2002) highlight the concept of consumer-oriented design, emphasizing the advantages of tailoring store environments to specific market segments. They discuss the potential for decentralized designs that align with the unique characteristics of local communities or regions, the way consumers respond to targeted marketing tools, and the value of a feedback loop that enables consumers to influence and shape retail strategies. Still, brand-based frameworks prioritize the representation of consumer interests within the design process without necessitating direct consumer participation. Their guiding principle is the desired brand identity as they aim to connect the retail design with the retail branding process. The retail design process is interwoven with strategic marketing processes and “while traditional retail format design is intended to target consumers in their buying behaviour, our branding perspective suggests including all internal and external stakeholders” (Botschen & Wegerer, 2017 p.876).

Both handover-based and empathy-based frameworks view consumers as subjects of research rather than participants in the design process. In handover-based frameworks designers lead the overall design process and extract information on consumer needs from the design brief drafted by the retailer. These frameworks differ on many other aspects. In

the framework by Moore and Lochhead (1998) retailers frame the problem, provide an accurate portrait of the consumer, conduct a trends analysis and ask designers to create a solution. Claes et al. (2016) propose a visual model showing activities, actors and tools in a retail design process. The framework highlights the complex intertwining of the retailer, the retail designer and society in which the consumer is embedded. The consumer is investigated in market research when establishing a need and defined as target group and/or personas. The consumer is involved at various steps of the process, but it is undefined to which extent the consumer actively engages as a valuable source of information and inspiration. Madsen and Petermans (2020) present a view of a designer's observable universe consisting of four subsystems: place of business, retailer spaces, staff, brand and product mix. The type of consumer involvement is not detailed, but the frameworks could be interpreted such that consumers are involved in the design process.

The empathy-based frameworks call upon designers to give empathic attention to consumers often in a first step of the retail design process. The framework by Seifer (2007) starts with data gathering preferably through observational research. Knox (2016 p.139) gives the name awareness to the first phase of the retail design process when "designers must make themselves acutely aware of the needs of their clients, the customers, and the landscape or climate". Knox (2016 p.141) emphasises consumer empathy: "An interest in, and an understanding of, human thought and behaviour will help determine what becomes effective design". Servais et al. (2021) highlight the consumer role in the analytical phase after the briefing by the retailer. They rename target group to customer which comprises the aspects of personality/self-image and expectations/value perception.

3.5 Barriers

In the frameworks being examined, consumers have limited involvement in the retail design process and are predominantly regarded as subjects of research. This stands in contrast to marketing and design literature, which highlights a shift toward consumer-centric approaches, where consumers are given the opportunity to co-create solutions and actively participate throughout the entire process (Sanders & Stappers, 2008; Sheth et al., 2000). The publications under discussion were reviewed to explore potential explanations. 6 barriers are identified: the first 5 pertain to the role of the retail designer, while the sixth is associated with the design process.

The first barrier relates to the role complexity of the designer, because they need to balance many aesthetical, functional, commercial, financial and legal aspects (Münster & Haug, 2017) at different abstraction levels (Haug & Münster, 2015) from many stakeholders (Knox, 2016), potentially even more stakeholders than in other design disciplines (Schüller, 2020) while one changed aspect results in a domino effect of changing other aspects (Knox, 2016). If designers plan retail space with financial and volume metrics of retailers in mind, they may overlook the deeper emotional drivers that make consumers choose a store and form the foundation of a relationship between the consumer with the retail brand (Quartier, 2011). Despite their best intentions, retail designers often base their decisions on intuition and personal aesthetic preferences (Raffelt & Meyer, 2012). Also, both designers and consumers derive pleasure from novel design, but it may result in higher perceived complexity for consumers (Murray et al., 2017).

The second barrier concerns the indirect inclusion of the consumer perspective. Designers often assume that retailers, who are perceived as having more knowledge of consumers, have incorporated consumer needs (Münster & Haug, 2017). Retailers typically conduct most consumer behavior and needs research (Quartier et al., 2008). However, this indirect knowledge transfer, rather than direct consumer engagement, is unreliable, especially when consumers interpret concepts like experience differently than other stakeholders. While retailers prioritize creating exciting experiences, consumers often seek more practical or utilitarian experiences (Bäckström & Johansson, 2006). The indirect inclusion may also be hindered by differences in argumentation style and vocabulary between designers and retailers. Petermans et al. (2013) note that retailers use more rational, logical arguments in the design process, while designers rely on emotional, narrative reasoning.

The third barrier relates to the type of consumer research. Available research from marketing and psychology disciplines sheds light on consumer behaviour by testing the influence of isolated environmental or atmospheric stimuli (Petermans et al., 2013). However, this collides with the holistic view by designers and as a result, retail designers do not take the consumer research into account sufficiently (Petermans & Quartier, 2021). Furthermore, designers may dismiss consumer research due to a perceived lack of credibility and relevance. More often than not, they associate research with questionnaires giving insight into consumer intentions and claimed behaviour rather than observed behaviour in actual retail environments.

A fourth barrier stems from the disconnect between academia and design practitioners. While marketers value academic insights from marketing and psychology, designers remain skeptical of consumer behaviour research, viewing experimental studies in artificial settings as lacking credibility and relevance (Calienes et al., 2016). Additionally, limited access to scientific knowledge often leads designers to rely on intuition rather than evidence-based practices (Petermans & Quartier, 2021).

Münster and Haug (2017) identify a fifth barrier: unlike other stakeholders, consumers express their preferences less explicitly. Designers do not intentionally overlook these preferences but often struggle to identify unconscious ones. Münster and Haug (2017 p.138) argue that “if designers had a better understanding of the consumers, they might be able to target their store designs even better, and they would have stronger arguments for their design choices in discussions with their clients”.

Finally, a sixth barrier results from perceived process complexity. Consumer interests are overlooked in a retail design processes that have been described as “evolutionary phases and continuous tweaking” (Kent, 2007 p.740; Schüller, 2020 p.28). Servais et al. (2021) conclude that decisions on experience are made in an intuitive way, are approached differently in each case, and happen in the executional post-concept development phase. Yet, when consumers are involved from the start of the design process, creative thinking and new approaches to problem-solving may flourish (Kent, 2007).

3.6 Accelerators

Though the selected publications do not suggest a participatory role for consumers in the design process, they hold arguments that may accelerate a more consumer-centric retail design. These arguments revolve around 4 themes: market dynamics, call for inclusivity, new technology and consumer experience.

First, as the number of options available for selling, distribution, communication, and payment increases, consumer expectations regarding retail environments evolve more rapidly in various ways (Christiaans & Almendra, 2012). Retail spaces are expected not only to reflect shifting societal trends but also to take a stance on societal debates, such as the sustainable use of materials (Lehner, 2015). Moreover, the more consumers perceive products as homogeneous, the more retailers strive to differentiate themselves through various means, with retail design serving as an enabler (Willems et al., 2016).

Secondly, the call for inclusivity may lead to more consumer-centric design. Various authors highlight the necessity for stores to accommodate the needs of particular target groups, such as an aging population (Petermans & Van Cleempoel, 2010; Yu et al., 2022), Millennials (Calienes et al., 2016) and consumers with physical and/or cognitive limitations (Celik & Yakut, 2021; Edwards et al., 2018). For instance, consumers with mobility impairments frequently encounter architectural barriers, such as entryway steps, while those with vision loss face challenges in reading store signage.

Thirdly, as a shopping journey integrates physical and digital components and advances in technology give consumers greater control, consumers expect a seamless retail brand experience across various media and retail channels (Kartajaya et al., 2019). In-store technology such as virtual reality is creating new opportunities to enhance the shopping journey (Bonfanti & Yfantidou, 2021; Siregar & Kent, 2019).

A final accelerator of consumer-centric design is the consumer search for meaningful and customised experiences (Petermans et al., 2013; Quartier, 2017). In the experience economy consumers are no longer viewed solely as buyers of products but as individuals with distinct personalities and feelings (Quartier, 2017). This shift necessitates new insights into consumers' self-image and emotions. Millennials, as a new generation, have stimulated the demand for experiential stores, as they seek to be entertained, value authenticity, appreciate personalisation and are tech-savvy (Calienes et al., 2016).

4. Discussion

Current retail design frameworks do not suggest that a consumer-centric design outcome requires a high level of consumer involvement. To better understand how designers and retailers could involve consumers, it is beneficial to make a clearer distinction between varying levels of involvement. The ladder of citizen participation by Arnstein (1969) served as foundation for conceptualising a similar ladder of increasingly higher levels of consumer involvement in the retail design process. To illustrate these levels, we utilised examples drawn from the publications in our review. We suggest 5 levels on which consumers:

- 1) are documented in consumer research reports;

- 2) are observed as part of the process;
- 3) give feedback on ideas, concepts and products;
- 4) create together with professionals in some phases of the process;
- 5) engage with the team as co-designers throughout the process.

The frameworks in our literature study facilitate designing retail space for consumers (levels 1 till 3), but they do not match the trends in marketing and design to co-create with consumers (levels 4 and 5). If consumers derive more of the value being created in retail from their experiences and their interaction with the retailer and other consumers rather than from the exchange of goods and services, the role of the consumer changes from buyer to actor in a store staged by the retailer (Pine & Gilmore, 2011). The consumer experience goes one step deeper if the stage is not set only by the retailer and consumers also co-create the stage (Prahalad & Ramaswamy, 2004; Russo Spena et al., 2012). We think that increasingly consumers will help decide on the stage and artefacts of the store. This is driven by the inherent characteristic of stores that production and consumption of the service occur simultaneously and the highly personal nature of an experience. Inviting consumers to co-create retail space, will tap into their creative capabilities and increase their engagement with the retail brand. This may also leverage retail design in a way to differentiate one retail brand from another (Petermans et al., 2013) which requires knowledge about which aspects of the retail design are important to consumers.

Co-creation may not be an objective in itself but a means to achieve consumer-centric retail design. Co-creation in all design phases is perhaps the highest level of consumer involvement as opposed to observing consumers and asking feedback on designs created by others. When delivering consumer-centric design, retailers may have relied on sales data or in-store observations, but whether such approaches are robust enough to withstand future developments such as the demand for in-store experiences remains unclear. The required level of consumer involvement may depend on the situation. When retailers roll out an existing concept it may be sufficient to measure the change in the composition of households in the catchment area in order to reallocate category space. More radically new retail concepts targeting previously unknown target groups may require more consumer involvement. This has implications for the choice of the retail design framework. Designers and retailers need to know for which situations the retail design framework was developed and select the relevant frameworks depending on the context. Also, the retail design frameworks may be designed in a flexible manner and allow for various levels of consumer involvement in the retail design process in terms of phase of the process, duration of the involvement and type of contribution.

5. Implications, limitations and future research avenues

This literature review of retail design processes, examined from the consumer's perspective, highlights the opportunity for greater consumer-centricity in store development. A key question is whether consumer-centric design can be achieved with minimal or no participation from consumers. We propose conducting experiments that vary the degree of

consumer involvement, assessed against a range of criteria representing the diverse priorities of stakeholders. These experiments could also explore how increased consumer involvement can be achieved without overly complicating the design process or the designer's role both of which currently are perceived as barriers to high consumer participation.

An additional contribution of this review lies in identifying barriers and facilitators to consumer involvement, which may help stakeholders optimize their processes. Six primary barriers to high consumer involvement in the design process were identified, most of which relate to the designer's role. Future research should also consider retailer-specific factors, such as budget constraints. Importantly, identifying these barriers and facilitators from the same body of literature that informed the frameworks and stakeholder analysis ensures specificity. However, employing alternative search terms might uncover a broader array of relevant factors.

Building on existing literature, we developed three types of frameworks for the retail design process. Brand-based frameworks are most applicable when developing or revisiting a brand identity statement, enhancing synergy across marketing instruments, working with less stringent time constraints, or operating within an organizational culture favouring structured approaches with clear accountability. Handover-based frameworks where the design brief plays a central role, are suited to contexts where designers are unfamiliar with the retailer's environment or where significant changes are anticipated. Empathy-based frameworks may prove effective in organizations with cultures that prioritize continuous change and adaptability. Further research is needed to validate two critical aspects within these frameworks: the actor leading the overall process and the actor responsible for involving consumers. Additionally, the applicability of the frameworks themselves requires evaluation. Rather than viewing the three frameworks as distinct processes tailored to specific contexts, they could be considered interwoven, allowing retailers and designers to integrate emphasis on brand identity, the design brief, and iterative feedback. This perspective suggests the need for a unified process description offering a menu of options that can be tailored to the specific requirements of the retail design context.

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Section 4

Future formats & Adaptive Retail

This session offers a reflection on emerging retail formats and the flexible regeneration of commercial spaces. Through case studies and experimental models, it explores future design scenarios that respond to shifts in consumer behavior and urban contexts.

Reimagining Empty Retail Spaces: Sustainable Potential for Pedestrian Streets Facing Retail Decline

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Rapid and significant reductions in global carbon emissions are needed to remain within Earth's limits. The construction and operation of buildings account for the largest share of the global consumption of raw materials, and they yield around 40% of global carbon emissions. Leading climate researchers therefore recommend adapting housing needs to existing building stock instead of constructing new buildings. This requires shifting the focus from what we desire to how we can adapt our needs to existing spaces. In addition to challenges with lowering carbon emissions, this paper, a work in progress, highlights two significant but unconnected challenges observed in several provincial towns in Denmark. First, the issue of empty retail spaces in pedestrian streets due to changing retail strategies and consumer habits; second, the issues of exploiting the untapped potential for tourism existing in some of these provincial towns, which requires attractive tourist accommodation. The aim of this paper is to explore if and how three issues can be addressed through one solution: Reducing carbon emission through build environments by using the existing building stock, revitalizing town centres struggling with empty retail spaces, and accommodating tourists without increasing carbon footprint. Rather than constructing new accommodation for tourists, we suggest transforming vacant retail spaces into holiday apartments, boutique hotels, and other types of places that can support sustainable urban development, and strengthen the local community, the local businesses, and the tourist appeal. Through a novel combination of analytical perspectives, this paper lays a foundation for further research into how retail spaces in pedestrian streets can be transformed in a manner that both tourists and locals find appealing.

Keywords: adaptive reuse; retail and hospitality design; tourist accommodation; provincial town revitalization

1. Introduction

The climate crisis is an urgent global challenge, and the consumption of materials and energy for constructing new buildings poses significant challenges in efforts to keep global warming below 2°C (Richardson et al., 2023). Buildings are the largest global consumers of raw materials and contribute about 40% of global CO₂ emissions (World Economic Forum, 2022). In this context, leading climate researchers strongly recommend avoiding the construction of new buildings and instead adapting our space needs to the existing building stock. This can be achieved by using or sharing existing buildings (with no or minimal renovation), by remodelling existing buildings, or, if necessary, by expanding existing buildings (Kuittinen, 2023). This requires us to shift our focus from what we want to adapting our needs to the existing structures we already have.

In many provincial towns in Denmark, vacant shops are already a conspicuous issue (Hjalager, 2024; Realdania, 2024), as shown in the examples in Figure 1. The same trend is evident in many other countries. Shifting consumer habits, the rise of malls and online shopping have significantly impacted many provincial towns and left pedestrian streets with empty retail spaces, diminishing their appeal and functionality (Alexander & Cano, 2020; Frascet et al., 2021).



Figure 1 Images of empty stores in the pedestrian street in the Danish town of Søndersborg in December 2024. Photos by the authors.

While more retail spaces remain vacant in many towns across Europe, quite a few of these towns have tourism potential and are therefore simultaneously working towards attracting tourists. In this process, new tourist attractions and holiday accommodations

are being built causing an increase in carbon emission. In Denmark, this is particularly evident in coastal towns, which have a high tourism potential (Hjalager 2024). Thus, the aim of this paper is to explore if and how three issues can be addressed through one solution: Reducing carbon emission through build environments by using the existing building stock, revitalizing town centres struggling with empty retail spaces, and accommodating tourists without increasing carbon footprint.

This work-in-progress provides foundation for further research by highlighting issues related to façade designs in pedestrian streets, and by suggesting a novel combination of analytical perspectives for a study. We propose that such a study should adopt a user-centred approach, involving both tourist and local stakeholders to guide the decisions made in any potential transformation of the empty retail spaces. Therefore, this article should be considered not as a finished piece of research, but rather as a concept for discussion.

2. Background

2.1 Global and local challenges

This paper addresses challenges on multiple levels. The climate crisis is a global challenge, the issue of the increasing number of empty stores in provincial towns is a local challenge, and the desire to increase tourism without increasing the carbon footprint operates at both national and municipal levels.

Vacant storefronts on shopping streets diminish the vibrancy of urban life at the neighbourhood level (Groth & Fertner, 2022; Realdania, 2024). With fewer shops, fewer visitors are attracted to visit the neighbourhood, ultimately reducing revenue and forcing even more businesses to close. This vicious cycle undermines the town centre's traditional role as a community hub, making these areas increasingly unattractive to both tourists and locals. Tourists' interactions with these towns shape their perceptions of local culture and society. Lively urban spaces are essential not only for maintaining a vibrant and relevant meeting places for locals but also for preserving the cultural appeal that attracts tourists. Many provincial towns in Denmark, which struggle with empty stores and inactive urban centers, also have economic potential for tourism, as they are often located close to the sea. Municipalities are therefore keen to explore this potential. Tourists from Germany, the Netherlands, Norway, and Sweden—the most important tourist markets for Denmark—do not yet demand sustainable and climate-friendly holiday accommodation (VisitDenmark, 2024). This may explain why municipalities do not seem to address reducing carbon footprints in their tourism strategies. However, at the governmental level, there is a growing focus on increasing tourism without the associated CO₂ emissions, particularly those related to the construction of tourism accommodations (Hjalager, 2024). In this paper, we explore if and how these issues can be addressed at the same time.

2.2 Active and Passive Facades in Pedestrian Streets

Gehl and Svarre distinguish between active and passive facade designs, noting that the facades design influence pedestrian behaviour (Gehl and Svarre 2013, pp. 104-105). In an observational study, Gehl found that passersby walk faster past passive facades, while various activities occur in front of active facades. These activities include slowing down, stopping, or observing the facades. Interestingly, activities unrelated to the facade itself also unfold in front of active facades. For example, more passersby stopped to tie their shoes, talk on the phone, or shift their shopping bags from one hand to the other. When active facades cause passersby to slow down, stop, and spend more time on the street, they may also increase social interactions.

This is relevant in relation to the transformation of empty retail spaces in pedestrian streets. In the provincial town Nakskov in southern Denmark, we have already seen examples of transforming empty shops into homes (Realdania 2024). Here, shop facades have been converted into townhouse facades with smaller windows and an entrance door providing access to the home through extensive restoration. This could be an ideal solution in large-scale urban development projects where entire pedestrian streets are converted into residential areas. However, it is unclear if this type of restoration is suitable for the renovation of buildings located in functioning pedestrian streets. While small windows allow residents to look out onto the street, traditional residential facades with small windows may not appeal to passersby in a pedestrian street. Compared to shop facades with window displays or outdoor seating, residential facades can seem dull and passive. Simply converting empty retail spaces into housing might not be the optimal solution if aiming to maintain vibrancy on shopping streets.

It therefore seems relevant to ask: How can these spaces be transformed in a manner that would be relevant and attractive for both locals and tourists? How can these buildings be activated, and what kind of vibrant life can they help create? We need more knowledge about how facades can affect life in pedestrian streets. Before proposing the conversion of retail spaces in pedestrian streets to housing, we suggest exploring different facade designs and their effects on various user groups including tourists and different types of residents.

3. Analytical Inspiration for Revitalizing Pedestrian Streets

3.1 Life between the buildings

While written in a different time and addressing different problems, we find Jan Gehl's thinking inspirational for reimagining empty retail spaces in town centres. Gehl's book *Life between buildings* (2011, originally published in Danish 1971) is a seminal work in the fields of urban planning and architecture. It explores how urban spaces and buildings influence human behaviour, well-being, and social interaction. Gehl urges us to think about and understand the subtle dimensions of people's interactions in public spaces and argue that these should be designed with a focus on people and their needs. Consequently, a central theme of the book is the importance of a human-centred approach to urban planning,

emphasising how people use and experience public spaces. Gehl asserts that well-designed urban spaces encourage social activities, which contribute to a vibrant public life.

Furthermore, Gehl highlights the role of movement and interaction in urban environments, arguing that streets, squares, and plazas should be safe, inviting, and conducive to human engagement. He also stresses the significance of scale and sensory experience in urban design, advocating for buildings and spaces that are proportionate to human dimensions, making them both comfortable and accessible.

We find scale an interesting point in relation to provincial town centres, as these areas are often dominated by buildings and spaces that Gehl would describe as being proportional to human dimensions. Pedestrian streets in provincial towns in Denmark are modest in width, making it easy for pedestrians to orient themselves and see what is happening on both sides of the street. The buildings are often two to three stories high, creating an open and spacious atmosphere that allows plenty of daylight to flood the area (Figure 1). This results in a bright and inviting environment. In contrast, many shopping malls that now serve as commercial centres in or on the outskirts of many towns have covered passages with little or no access to daylight.

Thus, we suggest that the pedestrian streets in old town centres have qualities worth maintaining. The question is how this can be done.

Furthermore, Gehl's thoughts are interesting in relation to developing the tourism potential of provincial towns. As argued by Hjalager (2024), historical town centres have always attracted tourists. Closure of shops and marketplaces lead to less life between the buildings and thus declining tourism. This brings us to the question: Can these abandoned shops be transformed in a manner that increases life and activities in the town centres (Figure 2)?

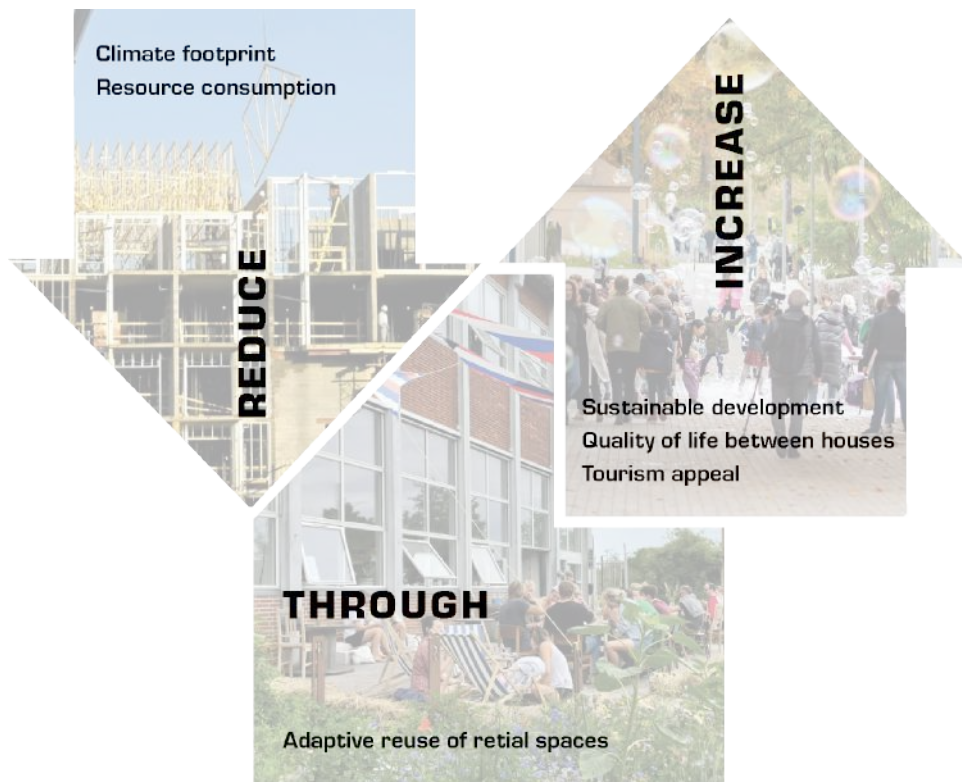


Figure 2. Our idea is one that, through the renovation of existing retail spaces in provincial towns, promotes climate-friendly behaviour, enhances quality of life and the community for locals, and strengthens local businesses, while also improving the experience for tourists—all without constructing new buildings.

3.2 Place based potentials

While Gehl's thinking has emphasized the importance of understanding and designing to enhance life between buildings, we propose to include another concept that will help us gain a more nuanced understanding of what sort of qualities the existing building stock offers and recognize that there are different potentials for adaptive reuse. For this purpose, the concept of 'place-based potential' is useful.

Place-based potential refers to the idea that the unique attributes of a geographic area—its natural resources, cultural assets, economic structures, demographic characteristics, and social networks—can be harnessed to foster development and effectively address challenges. This approach contrasts with 'one-size-fits-all' strategies by emphasizing that solutions and strategies should be tailored to the unique circumstances of each place.

The concept of place-based potential is not attributed to a single individual but has rather emerged from interdisciplinary fields, such as geography, urban planning, regional development, and the social sciences. This idea has been shaped by scholars and policy-makers exploring the unique characteristics of specific locations and how they can be leveraged for social, economic, and environmental development. The concept gained significant traction in academic and policy discussions in the late 20th and early 21st centuries. Influential frameworks include the European Union's place-based approach, wherein

the Barca Report, named after Fabrizio Barca (2009), outlines a participatory and context-sensitive framework for regional development, arguing against uniform approaches.

In the Danish context, the concept of place-based potential has been applied to address regional inequalities by redirecting the focus to the unique resources and characteristics of localities, especially in rural and peripheral areas (e.g., Tietjen & Jørsensen, 2016). It is widely used by the charitable trust Realdania, which also funds projects in provincial towns. In this project, we are inspired by some of these projects.

Place-based potentials is an approach that encourages efforts to revitalize spaces through strategic planning that emphasizes local assets (Figure 3). By linking the new with the old, this approach can help create a unique identity for these places, leading to storytelling and community engagement.



Figure 3. Examples of shop decorations that, if preserved in new contexts, can help tell stories about previous occupants. Left: a fish decoration on the facade of a fishmonger by the harbour in the provincial town of Søndborg. Right: pharmacy fixtures reused in a modern lifestyle store in Copenhagen.

In 1971, the Danish psychologist Ingrid Gehl wrote the book *Bomiljø* (Living Environment), where she used Maslow's pyramid of basic needs to examine how residential environments influence human well-being, behaviour, and social life. According to Niels Bjørn (2024), some of these individual needs are also related to place identity because people feel more at ease in an environment with a narrative, whereas people are alienated in anonymous, placeless environments. We propose these reflections as inspiration for examining tourists' preferences for holiday homes—for example, by asking how they differ from their everyday living environments—and for understanding their interactions with local culture, particularly whether a distinct place identity enhances these connections.

4. Challenges and Suggestions for Future Studies

So far, we have outlined the background for the suggested transformation of empty retail spaces in pedestrian streets and proposed analytical inspiration. Our proposal is entirely conceptual. This highlights the need for future studies to explore the potential of creating attractive settings for tourists through adaptive reuse of retail spaces, while simultaneously strengthening local life by developing design models and services that address the needs and aspirations of both tourists and locals.

A key challenge to this approach may lie in adjusting stakeholders' expectations and ideas for the future use of empty retail spaces, given that there are few precedents to rely on where former empty shops are turned into tourist accommodation (Bærenholdt and Grindsted, 2020). A study from the coastal town Rødby in southern Denmark describes how a coalition of locals in the town has implemented a unique form of accommodation, which they call a diffuse hotel in empty shop premises (Bærenholdt and Grindsted 2020). Others have explored the implementation of various commercial businesses in buildings originally intended for different purposes. For instance, a recent study from Copenhagen on adaptive reuse and café design revealed that, beyond the practical challenges of repurposing buildings, new occupants enjoy several benefits, such as unique atmospheres created by the blend of new and old design elements in new contexts (Münster 2024). Another challenge lies in unveiling the potential of existing buildings within the local context.

We envision that our future studies will take multi-method approach including:

- Studying exemplary cases
- Observing shops and facades and their influence on street life
- Exploring the place-based potential of empty shops
- Exploring stakeholders' needs and challenges

Studying exemplary cases

In terms of exemplary cases, this would involve examining already implemented projects both in Denmark, and abroad, and analysing how these existing cases cater to both tourists and locals. This could include cases such as the aforementioned cases in the provincial coastal towns Nakskov and Rødby, but also cases in neighbourhoods in larger cities such as the small Frederiksberg-based boutique accommodation, Hotel Central (Figure 3), where overnight guests from the hotel's only room dine alongside locals in the neighbourhood café on the ground floor. On a larger scale, Copenhagen's Kanalhuset (Figure 4), offers accommodation for tourists, but also offers activities for locals such as yoga classes, knitting club, and communal dining, where tourists can participate and meet locals. Additionally, the hotel rents out rooms of various sizes: the larger rooms are rented out for meetings or for locals who need to celebrate parties with many guests, while smaller furnished dining rooms with kitchens are rented out to locals for an evening, for those who want to invite guests for dinner but do not have space at home. As a result of

their thoughtful design and service model, both hotels have successfully integrated accommodation spaces with areas for locals to gather.



Figure 3, left: Hotel Central, which houses both a hotel room and a neighbourhood café.

Figure 4, right: Kanalhuset, which offers hotel rooms as well as communal dining, and activities like yoga classes and knitting club for locals as well as guests. Foto by the authors.

Observing shops and facades and their influence on street life

To explore how different types of shops, especially facades in pedestrian streets, affect street life, we suggest repeated observation studies of places, environments, and participants (Gifford 2016; Gehl and Svarre 2013; Madden 2017).

Exploring the place-based potential of empty shops

We suggest exploring the place-based potential of empty shops by: 1. examining what the municipality itself has identified as the special characteristics of the town. 2. mapping the architecture and history of the pedestrian zone. 3. examining the history and characteristics of selected buildings. Based on this, various potentials can be identified and discussed. For example, focusing on the most recent use of the store would often require the least refurbishment, resulting in a lower carbon footprint. However, in an old town center, it might also be valuable to restore the building's original façade, leveraging its historical and architectural potential. This approach may require more resources but could enhance the cultural and aesthetic value of the area.

Exploring stakeholders' needs and challenges

To study the local needs, challenges, and aspirations of various stakeholders—including tourists, residents, local businesses, and policymakers—we first suggest a combination of ethnographic fieldwork (Madden, 2017) and a user-centred approach, where researchers conduct interviews, observation studies, and workshops with stakeholders to gain insight into their needs, desires, challenges, and dynamics. Afterwards, we suggest outlin-

ing different types of housing and facade transformations, and applying a co-design process (Sanders, 2006) that actively involves stakeholders in the evaluation of ideas and in the creation of new proposals. For example, it could be relevant to discuss facade designs that vary in openness or encourage different levels of activity and lingering in front of the building. In this process, we suggest incorporating interactive workshop activities where users can share their perspectives, test design ideas, and collaboratively shape the final solutions.

5. Conclusions

Adaptive reuse of buildings originally intended for other purposes is common in several Danish towns, where museums, hotels, and other enterprises repurpose transformed spaces such as factories, also benefiting tourists (Hjalager, 2024). In this paper, however, we identify a growing issue with empty retail spaces in towns experiencing retail decline. In some of these towns, there is also a demand for tourist accommodation. The adaptive reuse of vacant spaces, such as transforming empty retail spaces into boutique hotels, holiday apartments or other lively hospitality venues, offers a promising solution to pressing climatic and social challenges.

In line with expert recommendations to halt new construction to lower CO₂ emissions, we propose an innovative idea that reconciles climate challenges with tourism aims. This idea aims to foster climate-conscious behaviour, promote tourism, revitalize towns, and enhance the well-being of locals and businesses through the adaptive reuse of existing shops.

We suggest investigating how these empty retail spaces in pedestrian streets can be transformed into attractive meeting places for tourists and locals. This should be explored further in a study that takes a user-centred approach, examining the expectations and needs of locals, business owners, and tourists to successfully transform these spaces into community-strengthening hubs.

With the goal of supporting sustainable urban development, encouraging climate-friendly behaviour, and strengthening local culture and economic vitality in towns experiencing retail decline, this article lays the foundation for further research and collaboration with stakeholders to test and refine these ideas.

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Designing Retail Development Spaces – The Case of the Future Retail Store

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Abstract: This paper addresses innovation challenges faced by small and medium-sized retailers by introducing the concept of a Retail Development Space (RDS) to drive business model innovation. Using a narrative case study approach, we examine the Future Retail Store (FRS) initiative, tracing its evolution and impact on participating retailers. As active participants in the project, we draw on our firsthand experiences to provide a detailed account of the RDS's development and its implications for retail innovation. Through critical reflection, nine foundational design principles for future RDS projects are derived. These principles underscore the importance of dedicated spaces to handle complex retail innovation, tailored methodologies, careful integration of user participation, external incentives for SME retailers, and the use of retail-specific metrics for evaluation. The study contributes to both practice and research by providing practice-infused implications for designing and implementing RDS.

Keywords: retail innovation; retail development space; future retail store

1. Design Challenge: Spaces for Business Model Innovation in Retail

The retail landscape is undergoing a significant transformation, driven by digitalization, shifting consumer expectations and competition from e-commerce (e.g. Vhatkar et al. 2024). Small and medium-sized retailers (below 50 employees) are by numbers the largest group. Many of them rely intensively on stationary activities and are challenged to re-invent their business models to remain competitive (Mostaghel et al. 2022). While Business

model innovation (BMI) is generally a feat of strength for many SMEs due to a lack of dedicated resources, the constraints of daily operations in retail add additional barriers to innovation success.

To facilitate business model innovation and empower SME retailers to shape their future, specialized innovation environments are essential. Development spaces, such as living labs (LLs), offer promising solutions for this purpose. They allow new concepts to be tested under real conditions with structured support, playing a vital role in the digital and sustainable transformation of the economy and society. While real-world laboratories have become widely adopted in several industries, their adoption in retail has been limited. Against this background, the central research question emerges: How can an environment be designed that motivates and facilitates business model innovation in SME retail companies?

In the following, we present a paper positioned at the nexus between retail innovation practice and theory. It reports on the development and findings from the Future Retail Store Initiative (FRS) - a Retail Development Space (RDS) that has facilitated BMI activities at three retailers since its inception in 2023. The paper is written as a narrative, drawing on firsthand experiences in conceptualizing, funding, launching, and operating an RDS. In the following, we present the theoretical foundations that led to the FRS concept, show its development history, illustrate the FRS structure, and provide insights into BMI activities within the FRS. Reflecting on the development process and current state of the FRS, we propose nine design principles to guide future RDS developments.

2. Theoretical Foundations on Retail Development Spaces

Innovation is crucial for the adaptation and survival of any enterprise. Successfully experimenting with new technologies and approaches forms the foundation of innovation. Despite this evident link, many organizations struggle with effective experimentation (Gillier & Lenfle 2019). In the following section, we introduce theoretical concepts that fused the development of the FRS: (1) experimenting in retail and (2) knowledge on physical development spaces.

2.1. Experimenting in Retail

Experimentation can be considered a problem-solving process (Simon 1969, 1973) that varies depending on the nature of the problem. Accordingly, the literature classifies a set of experimentation practices (e.g. Gillier and Lenfle 2019) that can be used to derive specific characteristics considering the retail environment:

Particularly for traditional stationary retailers, experimentation is critical in the face of digital transformation and competition from online-only players. Scientific and data-driven methods increasingly shape innovation activities across all sectors (Thomke & Loveman, 2022) with a strong focus on algorithmic and adaptive search practices. Online retail predominantly relies on continuous algorithmic search (e.g., A/B testing), facilitating data-driven decisions. The seamless availability of data provides online retailers with a competitive advantage but also requires specific competencies (Kohavi & Thomke, 2017). If “pure

trial-and-error” is considered to be an adaptive approach (Thomke 2001, 2003), most traditional retailers currently focus on this approach – however, at a relatively low level of complexity. We also find more professional innovation processes that employ workshop-based approaches or retail-specific concepts such as pop-up stores (Poldner et al., 2022). While some retail innovations in practice stem from random inspirations or continuously developed individual knowledge spaces (Hatchuel & Weil 2009), systematic approaches in retail remain rare outside academic settings (Danzinger & Perez Mengual, 2023). Overall, professional experimentation practices in retail are relatively low in practice and barely documented in literature. To address this gap in research and practice, we can derive retail experimentation specifics that should be addressed by development processes and respective spaces:

(1) Nature of retail. On the one hand, there are (inter)nationally dominant retailers, such as Walmart, Lidl or Amazon with professional corporate innovation and experimentation structures (e.g. Innovative Retail Lab at Globus). These organizations are not the focus of this paper. Neither are pure online retailers with perfectly measurable customer journeys and consistent customer journeys. The primary focus is on SMEs (Bezes, 2024), either as independent businesses or part of larger structures (e.g., franchise, affiliate). They operate in stationary and/or hybrid formats, often holding limited customer journey data and having most resources tied to the shop floor.

(2) Ambidexterity: Generally, every company must balance between ongoing operations and future business development (Raisch & Birkinshaw 2008). In retail, this conflict takes place directly on the sales floor and in interaction with (existing) customers. Any new product, process or service competes immediately with existing ones. This raises quality requirements for prototypes. Since there are no “safe spaces for innovation” experimentation is more complex and costly, sometimes therefore even avoided. At the same time, experimental results are directly embedded in retail, making them highly relevant (e.g., conversion rates, total sales) and reducing implementation costs.

(3) Complexity of experimentation: In retail, we find three intertwined levels of experimentation:

- Touchpoint Level: New products/assortments, services, or processes are tested as part of operational retail (“real labs”). Unlike common retail practices, experiments should be systematically controlled. Iterative and adaptive search methods, as described by Thomke (2003), can guide this process.
- Business Model Level: BMI involves changes such as new store layouts, locations, or customer groups. Unlike touchpoint-level experiments, existing (physical) structures pose significant barriers to radical (BMI) experimentation.
- Ecosystem Level: Stationary and hybrid retail are an integral part of local communities (e.g., city centers). Although ecosystems should generally be considered for experimentation, retail ties are much stronger (e.g., buying behavior, surrounding competition) and determine whether experiments succeed or are

even feasible. “Extreme” experiments even lead to co-experiments at both, retail and ecosystem levels (e.g., new store opening hours).

(4) Specific customer integration: Customer co-creation (Maglio et al., 2009; Grönroos, 2011) and the dominant logic of service (Lusch & Vargo, 2006) have become widely accepted paradigms in innovation management over recent decades. However, these paradigms have been fundamental value drivers in retail for centuries. The challenge in retail experimentation is not adopting co-creation but rather effectively experimenting despite the existing customer base, selecting the right subgroup of new customers, determining the appropriate level of (innovative) interaction in specific steps, etc.

(5) Embracing scientific and iterative approaches: The success of online retail demonstrates that algorithmic and adaptive methods provide a solid foundation for retail innovation and thus, need to be part of an RDS.

Due to the specific nature of smaller businesses, aspects of random and expandable experimentation are very promising: Especially the (6) provision of inspirations and the (7) accessibility to an inventory of experimentation (=knowledge and solution spaces) appear to be of high value for retail. Finally, the complexity of experimentation paired with the limited resources for innovation in SMEs requires a deliberate (8) creation of degrees of freedom for experimentation with respect to space, financial support, advocacy, etc.

2.2. Design of Development Spaces

When looking for conceptual support for development spaces, there is a large amount of literature on living labs (LL) for co-creation and open innovation as well as real laboratories. In practice, living labs refer to a wide range of online and offline activities (www.enoll.org). Greve et al. (2021) conclude their review that there is to date no comprehensively accepted definition of a LL. However, we find some common elements and design levers that most labs share: LLs are not just considered to be spaces but also (a) an own research approach (Chronéer et al. 2019) and hold a strong focus on (b) user-centricity (Bergvall-Kåreborn et al. 2009). Moreover, they provide (c) a realistic environment for experimentation and development (Dell'Era & Landoni 2014; Bergvall-Kåreborn et al. 2009), (d) they open up a space for learning, innovation and experimentation (Westerlund & Leminen 2011). LLs offer as “in-between-spaces” (e) a strong link to science and research (Dell'Era & Landoni 2014; Klooker & Hölzle 2023) and consider (f) open innovation and co-creation as a core principle (Katzy 2012). Real labs are a specific development in Germany that carries also regulative interests and is especially of value for the environment of retail businesses. The definitions share the elements (c-f) but add the aspects of (g) a public/regulative interest, (h) a physical boundary and a time limit.

There is a proximity between LL and real laboratory approaches and the requirements towards RDS. Yet, there are design elements (e.g. the necessary presence of operating customers) in which RDS inevitably must deviate from these labs to enable experimentation with new business models and to account for existing issues of ambidexterity. Consequently, we use the existing insights and adapt the body of knowledge to derive design requirements for an RDS.

3 Designing the RDS “Future Retail Store”

The existing knowledge base informed the design of a Retail Development Space (RDS) known as the “Future Retail Store” (FRS). Funded by the Günther Rid Foundation for Bavarian Retail—a retail-focused organization with its own retail operations but also dedicated to foster development and innovation in small and medium-sized retailers—the FRS represents a retail-oriented initiative rather than a research-driven project. The development history of the FRS dates back to 2017. The current FRS initiative has a duration set for three years, from 2023 to 2025. The initiative is open to multiple retailers and has, to date, facilitated three completed or ongoing retail experiments. In the following sections, we briefly describe the development history of the FRS (3.1), outline the structure of the initiative (3.2), and provide insights into business model innovation (BMI) activities within the FRS through the case of one participating retailer, “Urban Gardeners” (3.3).

3.1. Developing the Future Retail Store Initiative

The Future Retail Store initiative has undergone significant evolution from its inception in 2017 to its launch in 2023, encompassing changes in concept, funding, and infrastructure. This section provides an overview of (1) the evolution of the Retail Development Space (RDS) concept, (2) its financing journey, and (3) the established infrastructure.

- **Evolution of the RDS concept:** Originally envisioned in 2017 as a technology lab and showroom for retail digitalization, the FRS initiative has evolved into an incubator for innovative retail concepts. Today, its focus is on implementing and evaluating digital solutions and business models in small- and medium-sized retail, emphasizing industry-driven innovation over a technology-push approach, thereby embracing the principle of “retail helping itself.”
- **Financing and project development:** The initiative began with a consortium project proposal submitted to a regional state ministry. In 2018, the state government designated it a digital lighthouse project, approving its implementation. When state funding fell through, a scaled-down version, funded solely by the Günther Rid Foundation, emerged. Initially postponed due to the COVID-19 pandemic in 2020, the project was revived in 2022 and launched in 2023.
- **Infrastructure:** A dedicated project management company, the FRS GmbH, was established. This company acts as a facilitator, enabling participating retailers to experiment with minimal risk. Its functions include leasing the store space, managing the budget and ensuring quick and efficient ordering processes for technology and store fixtures. The company also allows for bypassing tender procedures for larger investments, typical for governmental actors or large corporations, enabling greater agility.

3.2. The Future Retail Store Initiative

The Future Retail Store (FRS) initiative supports businesses in innovating their business models and exploring digital technologies. The FRS aims to provide a ideal development space for SME retail companies to actively shape the future of retail, while also helping

young companies navigate the challenging founding and scale-up phases. To this, the FRS provides three support elements to SME retailers:

- **Methodological support and network:** This aspect ensures that retailers receive appropriate methodological support before and during their experiments. However, it is "only" help for self-help – the core impetus delivers the retailer. This support involves finding the right partners for detailing the experiment or involves tasks such as data analysis and interpretation while simultaneously setting new impulses through research activities.
- **Affordable retail space:** The initiative provides a cost-effective retail space, aiming to create a separation from the core business and allow retailers more freedom to experiment with their business models. One of the spaces (see figure 1) is located in the heart of Munich's city center (Marienplatz), one of Germany's busiest locations. This 600 square meter retail space serves as a real-world laboratory where innovative business models and digital technologies for brick-and-mortar retail can be tested under authentic conditions.
- **Financial support:** The FRS provides comprehensive financial backing (up to 400.000€) to enable retailers to explore innovative technologies and store concepts without risking their core business. Key aspects include: (1) funding for emerging technologies with uncertain but potential value and (2) coverage of technology acquisition and store modification costs. The goal is to create a low-risk conditions for retailers to test and develop new business models and technological solutions. It is important to highlight that it is an integral part of the FRS concept that besides financial aids, the retailer needs to cover most of the experiments efforts and needs to gain returns by sales within the newly tested retail format.



Figure 1 A 600 square meter retail space was provided in a central location for the Future Retail Store. From the outside, it's not recognizable as a laboratory, but rather a real store with real customers and real transactions. (Source: Future Retail Store / Günther Rid Stiftung)

In addition to the three support elements that directly benefit participating retailers, the FRS holds several other key functions. Extending beyond basic project management and administrative tasks, these include more strategic activities:

- **Activation:** The FRS started with a Bavaria-wide call for applications in August 2023. This call provided transparent and motivating information about the available store space, allocated budget, and scientific support for the project, as well as the requirements for applying retailers. The selection process was competitive, attracting 39 applications over a four-week period. This high level of interest underscored the retail industry's eagerness to participate in innovative projects.
- **Transfer of knowledge:** Beyond facilitating BMI at individual retailers, the FRS aims to generate and share transferable insights, approaches, and application examples for small and medium-sized retailers. These insights are derived from the individual experiments conducted within the initiative. To ensure that this knowledge reaches the broader retail community, the FRS publishes papers that are accessible to retailers, complete with detailed descriptions and implications. Additionally, the initiative organizes events, as illustrated in figure 2, to further disseminate these findings and foster industry-wide learning.



Figure 2 At transfer events, retailers are introduced to insights gained e.g. from experiences with the AI chatbots "Plantfinder". The focus lies on illustrating development costs and actual added value. Above illustrated is the event "Future Retail Store Insights" from September 2024, where about 100 retailers participated. (Source: Future Retail Store / Günther Rid Stiftung)

3.3. The Urban Gardeners Concept in the FRS

Urban Gardeners, founded in 2024, represents the fifth generation of a traditional garden center. The concept was selected as one out of three retail businesses in Bavaria as part of the FRS initiative. Designed for urban residents passionate about "Urban Gardening" and "Urban Jungle" trends, the store offers a product range tailored to city life, including low-maintenance indoor plants, creative solutions for balconies and windowsills, and stylish planters.

Technology plays a key role in the Urban Gardeners experience. An AI-powered "Plantfinder" chatbot provides personalized recommendations and expert advice, while 3D printing technology allows for the creation of custom plant accessories. Beyond its retail offerings and specific touchpoints, the store aims to foster a vibrant community atmosphere. The "Gardeners Coffee Club" café invites visitors to enjoy daily specialties, while the basement serves as a multifunctional space for workshops, social media content creation, and even a ping-pong table, making plant shopping an engaging experience. The goal of Urban Gardeners is to prototype the ideal plant shop for urban living. As part of FRS, it is sought to explore how a garden center can successfully operate in a compact city-center location and what added value modern technologies can offer to SME retailers.



Figure 3 Experimentation with the business model: The Urban Gardeners' original product range targeted a young, urban demographic. Initially, the mix was 70% indoor and 30% outdoor plants. However, indoor plants sold better, while outdoor plants struggled in the store environment. The mix was adjusted to 90% indoor and 10% outdoor plants. Unexpectedly, the store attracted a diverse age range, leading to the inclusion of products like orchids to cater to older customers' requests. This was measured using retail-specific measures such as sales, revenue, and conversion rate. Sensors and cameras were also installed to capture data on age and gender in compliance with data protection regulations. (Source: Future Retail Store / Günther Rid Stiftung)



Figure 4 Experimentation with touchpoints: Plants require extensive consultation, and this is where the AI chatbot 'Plantfinder' comes in. It helps customers find the perfect plant for their individual conditions while also providing untrained staff with expert-level plant knowledge. This ensures consistent, high-quality advice—even when experienced staff members are unavailable. To test the 'Plantfinder', both in terms of the use case and the prototype-specific usability, methods such as interviews, observations, and thinking

*aloud were employed. Using this information, the 'Plantfinder' was revised multiple times.
(Source: Future Retail Store / Günther Rid Stiftung)*

At present, insights gained from experimentation are also being transferred to the traditional garden center: (1) The AI Chatbot “Plantfinder” is currently being adapted to cover the broader garden center product range, though scaling from a few hundred items to over 20,000 presents significant challenges. (2) 3D printing has been prominently implemented in-store, with retailer-designed plant accessories now available for sale. (3) The Urban Gardeners concept has evolved into a pop-up business model, gaining popularity in urban residential areas.

4. Design Principles for Retail Development Spaces

Reflecting on the theoretical foundations, development history, and current state of the FRS, we propose design principles to inform the design of future RDS. The development of the design principles took place in an iterative process involving two researchers. Both researchers have extensive experience with living labs (each >10 years of professional development), including the establishment and operation of an open innovation laboratory. One of them was as fully engaged scholar (Van de Ven, 1992) part of the development process and is involved in the operations of the FRS. The other researcher was accompanying the FRS development process as a neutral observer but is not part of its operations.

The iterative process began by developing initial design principles from two key sources: experimentation in the retail domain (1-8) and existing knowledge on living labs and real-world laboratories (a-h). These initial principles were then evaluated and enhanced by reflecting on the experiences gained from developing and operating the Future Retail Store (FRS).

As a result of this process, we propose the following nine design principles (DP), serving as practical framework for designing RDS. The DPs (figure 5) show an inherent structure: DP I-III highlight the general specifics of retail experimentation, DP IV-VII outline the content-related design requirements, DP VIII deals with the necessary industry-wide transfer of a RDS, and DP IX deals with the role concepts of the actors in an RDS. In the following, the DPs, their basic anchors in existing foundations (1-8 and a-h) are described and specific evaluation aspects are highlighted.

Environment (Experimentation in Retail)	Relevance	Central Design Principles for Retail Development Spaces	Rigor	Knowledge Base (Living Labs, Real Labs)
(1) nature of retail / SME Focus		I: complex innovation in retail requires dedicated development spaces		(a) own research approach
(2) ambidexterity		II: retail experimentation demands a tailored process and methodology		(b) user-centricity
(3) complexity of experimentation (touchpoint, BMI, ecosystem)		III: active user participation is only partially achievable in retail settings		(c) realistic environment for experimentation and development
(4) specific integration of customer				(d) space for learning, innovation and experimentation
(5) embracing scientific and iterative approaches		IV: external incentives are necessary to encourage SME retailers to experiment		(e) strong link to science and research
(6) provision of random and inspiring elements		V: provide access to methodological expertise for guided experimentation		(f) open innovation and co-creation as a core principle
(7) accessibility to an inventory of experimentation		VI: ensure availability of domain knowledge and technological expertise		(g) public/regulative interest
(8) creation of degrees of freedom (space, financial support, ...)		VIII: usage of retail-specific metrics as key indicators for realistic evaluation		(h) limitation to physical boundary & time
		VIII: establish systems for knowledge documentation and transfer		
		IX: establish a retail specific engaged scholarship approach amongst participating actors		

Figure 5. Environment, knowledge base and central design principles for retail development spaces

DP I: Complex innovation in retail requires dedicated development spaces

A RDS is a distinct research approach that provides a realistic environment for experimentation and development (a). It has limitations in terms of physical boundaries and time constraints (h). To date, this often silently implies a specific, encapsulable experimental setting in a (real) lab situation which is not fully applicable to/transferable into retail. A RDS should enable (simultaneous) experimentation at three specific levels (touchpoint, business model innovation, ecosystem) including a real-world setting (e.g. fully realistic customer environment). At the same time the RDS needs to account for the risk of competing and even potentially jeopardizing existing business operations (2). The high number of applications for the FRS supports the notion that retailers seem to be more willing to take risks in the RDS context than in their own retail spaces.

DP II: Retail experimentation demands a tailored process and methodology

Scientific and iterative approaches in algorithmic and adaptive methodologies (5,e) have a strong connection to science and research. Such approaches are relatively well-implementable by researchers, living labs and large corporations. The SME structure of the retail sector necessitates its own unique experimentation process compatible with day-to-day operations, different levels of experimentation and the specific nature of customer co-creation in retail (1). The FRS initiative has demonstrated that the dynamic nature of retail presents challenges for implementing long-term planning and elaborate research designs. RDS require a certain degree of flexibility, openness, and agility that are often unfamiliar to traditional research approaches. This finding also led to the proposition of the DP IX.

DP III: Active user participation is only partially achievable in retail settings

Existing labs often strongly emphasize customer involvement and co-creation of products and services with customers (a,f). However, in the retail context, this approach is only partially feasible: Whereas retail lead users/customers can be actively included into, for ex-

ample, business model workshops, experimentation with its implementation into touch-points is more challenging (b): Customers enter an OI Lab expecting to participate in a development process, while retail customers primarily enter a store with the intention of completing a transaction (1). Consequently, innovation methods and co-creation techniques must be bootstrapped and applied wisely for retail experimentation. The challenge lies in integrating innovative participatory approaches without disrupting the core transactional nature of retail interactions, necessitating a careful balance between fostering innovation and maintaining efficient and real retail operations (2,4). Within FRS various participation approaches were designed, deployed and tested. A comprehensive questionnaire, for instance, irritated customers who came to the store with transaction expectations. Better experiences were made with minimally invasive methods, such as observations and short semi-structured interviews.

DP IV: External incentives are necessary to encourage SME retailers to experiment

The ambidexterity challenge faced by small and medium-sized retailers is coined by limited resources being available for both daily operations and innovation activities (2). These businesses lack innovation departments with substantial budgets, as well as exposure to inspirations and respective partners (1). Consequently, complex innovations, particularly those involving business model innovation, are associated with significant risks. To encourage small and medium-sized retailers to undertake these risks, external incentives and risk mitigation measures are essential (8,d). These may include financial support (c), knowledge transfer programs (e), or collaborative initiatives that distribute the burden of innovation across multiple stakeholders in the retail ecosystem (5). The FRS initiative illustrates that SME retailers possess abundant ideas and creativity. The external risk-mitigating incentives proved to effectively motivate retailers to take action.

DP V: Provide access to methodological expertise for guided experimentation

Experimentation is complex and time-consuming (3). The iterative/adaptive approach (5), data collection, analysis, and interpretation are all resource-intensive activities. For successful experimentation, these steps must be rigorously followed and must cause learning and development. However, the limited resources of SMEs (1,2) suggest that these steps may not always be consistently adhered to, or there may be a lack of methodological expertise. Ideally, retailers need partners who can take over or oversee these functions, thereby steering and challenging the process (e). Such partnerships can provide the necessary expertise, resources (8), and oversight to ensure that experimentation is conducted effectively and efficiently (d), despite existing in retail.

DP VI: Ensure availability of domain knowledge and technological expertise

Methodological knowledge alone is insufficient, as an innovation process must have a starting point. Ideally, this process should begin with the problems, challenges, or capabilities of SME retailers. However, additional inspiring elements and, most importantly, domain knowledge about retail, technology, and business models are crucial (6). Questions such as "What has already been experimented with (elsewhere)?", "What insights were gained?" and "What is an orientation point for xy?" are vital. Ideally, a RDS should provide access to this collective knowledge (7), preventing each retailers from having to reinvent

the wheel or even departing into a dead-end road. This approach fosters a collaborative innovation ecosystem, where insights and experiences are shared, accelerating the overall pace of innovation in the retail sector (d). In case of the AI-Chatbot “Plantfinder” the retailer possessed domain knowledge and knowledge about technology, but not methodological knowledge on how to advance their prototype. Thus, effective knowledge provision (e.g. via direct approachable partners or available data sources) was a key task of the FRS.

DP VII: Usage of retail-specific metrics as key indicators for realistic evaluation

Living Labs often claim to provide a realistic environment for experimentation and development (c). However, the real-world viability of developed products, services, and business models cannot always be guaranteed as the reality is more complex. The physical similarity between labs and retail spaces presents a significant advantage in this context (1). Retail performance indicators (such as revenue, conversion rate, customer flow patterns, and average transaction value) should be effectively utilized as measures to evaluate all experiments (4,b). If retail experimentation cannot prove effects on these (hard) retail dimensions they are likely to be doomed in practice. Although it might hinder researching specific constructs and phenomena from a research perspective, this approach enables a more accurate assessment of innovations in retail, thereby enhancing the validity and applicability of experimental outcomes for practice. Industry feedback from transfer activities shows that using retail-specific measures also facilitates communication - it just helps to speak the same language as other retailers.

DP VIII: Establish systems for knowledge documentation and transfer

For inspiration and experimentation knowledge to be shared and made available to other retailers, a RDS must take the role of an active transfer partner. While many retailers now engage in experience-sharing (peer) groups (1), systematic documentation of experimental results (3) is essential to enable future generations of retailers to access and benefit from these findings (6,e,f). This principle emphasizes the importance of creating a structured repository of retail innovation knowledge, fostering a cumulative learning environment that transcends individual experiments (7). By acting as a central hub for knowledge transfer, the RDS can accelerate innovation adoption and reduce redundant efforts across the retail sector (8,d,g). Interestingly, in the case of the FRS, sharing insights is not perceived as a threat by retailers. This openness to sharing information contrasts with traditional retail practices, where businesses often guard their proprietary knowledge

DP IX: Establish a retail specific engaged scholarship approach amongst participating actors

The last DP is not derived from theoretical knowledge but instead derived from experience with FRS only. By entering FRS context all actors (except of the customers), i.e. retailers, partners, and researchers, had to adapt their roles towards an “engaged retail scholarship”. This finding should not be confused with the practice in existing living labs: In many living labs, engaged scholarship (Van de Ven, 1992) is well-established as a research principle. This approach involves scientists being directly engaged rather than neutral observers. We propose that this engaged scholarship approach should be embraced and

strengthened in RDS. For researchers, this means fully immersing themselves in the retail domain, acquiring domain knowledge, understanding how retail works and adapting their toolset. This enables them to generate transferable knowledge while simultaneously addressing practical problems in retail. Simultaneously, retailers need to adopt a more analytical and experimental mindset, actively participating in the research process while maintaining their operational responsibilities.

5. Contribution, Limitations and Outlook

This paper contributes to retail innovation by illustrating what a Retail Development Space can look like by showcasing the development history and essential components of the Future Retail Store. It also provides nine practical design principles for developing RDS in real-world retail settings. These principles can offer guidance for actors looking to create environments that foster innovation in retail.

However, our paper is subject to limitations. Primarily, it focuses on the development of a RDS within the German retail context, funded by a retail-oriented foundation. This specific setting may constrain the direct transferability of our findings to other contexts. Nevertheless, while the exact replication of our case may not be feasible, we argue that the proposed principles could be effectively adapted and implemented in RDS initiatives developed by diverse actors, e.g. governmental agencies. Additionally, the deep involvement of at least one researcher raises methodological concerns akin to other studies employing methods such as action research and engaged scholarship. While this involvement enabled unique insights otherwise not obtainable, it also presents challenges in maintaining objectivity.

Looking ahead, future research could explore the transferability of these design principles to diverse RDS contexts and investigate how an 'engaged retail researcher' profile differs from, and complements, traditional retailer- and researcher roles within such spaces. While the FRS has proven effective in fostering BMI, challenges remain in optimizing data collection methodologies within RDS environments. Further work is needed to identify approaches that enable rapid data acquisition and analysis, delivering actionable insights for retailers in a timely manner.

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Mapping trends of the evolution in the retail sector: a case study of a design research project

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Abstract: The retail sector is evolving through the integration of physical and digital spaces, making omnichannel commerce the dominant model. This shift presents challenges and opportunities related to sustainability, consumer expectations, and strategic changes in businesses. This paper presents a design research project that maps promising trends and potential strategic business directions in the retail sector. 26 case studies were collected and analyzed through a design-led research process, identifying seven key trends in consumer behavior, technology integration, and business model evolution. These insights were validated through a webinar attended by industry professionals. The findings highlight the need for brands to rethink their relationship with products, stores, and customer interactions to foster innovation. Future research will refine these insights through sector-specific studies and collaborative workshops, further exploring how emerging trends shape retail strategies.

Keywords: trend research; retail; omnichannel commerce; strategic design; case study

1. Introduction

After years of heated debate between the belief that the future of commerce would be exclusively online and the certainty of the primacy of physical stores, omnichannel has emerged as the dominant paradigm in the retail sector. It has been made possible by the growing integration of physical and digital spaces, redefining sales dynamics (Hänninen et al., 2021; Tyrväinen & Karjaluoto, 2019). However, both the traditional model and the exclusively online approach are increasingly criticized, highlighting the urgent need to pursue sustainability not only economically, but also socially and environmentally (Zhang et al., 2023).

In response to these challenges, it is essential for industry players to explore new approaches capable of understanding and meeting emerging consumer needs. Strategic design can play a key role in helping industry stakeholders identify these new approaches. Specifically, this paper focuses on research into retail trends conducted by the authors in

2023 and 2024 in collaboration with WIP Italia, a digital design company based in Milan, that has been exploring how the sector is evolving to offer solutions and services tailored to their clients' needs.

The research combines academic expertise with professional practice, using a strategic approach to examine the relationship between the digital and physical worlds and to identify new directions for developing services that address people's evolving needs.

The paper is divided as follows. The first part analyses a theoretical background that explores the conceptual pillars and evolution of the following topics: the changes in the retail panorama and the role of a strategic design approach. The research methodology provides insights into the approach adopted in the study. The results section comprises an analysis of the trends identified. This analysis reveals concrete strategic directions crucial for brands to face the sector changes. Finally, future steps are presented in the conclusion.

2. Theoretical Background

The literature review was divided into two parts, the first focusing on the changes in the retail landscape, the second on the research approach that guided the work carried out.

2.1 The changes in the Retail panorama

In recent years, the physical retail sector has undergone profound transformations, accelerated by global events such as the COVID-19 pandemic and subsequent socio-political tensions. The 2020 health emergency triggered a sudden and significant shift in consumer behavior from offline to online, pushing retailers to redirect investments from physical store innovation to strengthening eCommerce platforms, thereby accelerating a digitalization process already underway.

Even before the pandemic, the debate centred on the role of physical stores in an increasingly non-linear customer journey shaped by evolving consumer expectations in an increasingly digital context. The hypothesis of the "death" of physical stores was widely discussed, but post-pandemic data indicates that, despite the growth of eCommerce during 2020-2021, physical retail remains a central touchpoint in the shopping experience, albeit with a transformed role.

The store, therefore, needs to be reinvented, but it is also essential for eCommerce—just as eCommerce needs physical stores. (Osservatorio Innovazione Digitale nel Retail, 2023).

Today, the transformation of the sector is no longer just about digitalization or transitioning to digital. While the concept of Retail 4.0 (Kotler & Stigliano, 2018), introduced before the pandemic, was primarily characterized by the dominant role of eCommerce, we now speak of a post-digital era (Kotler & Stigliano, 2024), defined by the pervasiveness of channels and the increasing technological competence of users. This has led to the definitive overcoming of the distinction between physical and online, replacing it with a fluid customer journey in which consumers interact with multiple and varied touchpoints throughout the purchasing process.

The shift from a multichannel strategy to an omnichannel one—where shoppers can access brands across multiple channels without disruptions in their purchasing experience and, more broadly, beyond channel divisions—requires integration and coherence between online and offline platforms to ensure seamless and engaging experiences (Flavián et al., 2020; Lim et al., 2021, 2022c). Furthermore, this new phase is supported by tools such as artificial intelligence, augmented and virtual reality, which open new opportunities but also raise concerns about data security and privacy (Ameen et al., 2022; Luo et al., 2024; Soon et al., 2023).

At the same time, the growing focus on sustainability is redefining the sector's strategic priorities, as highlighted by the European Union's Corporate Sustainability Reporting Directive (CSRD), which requires retailers to integrate environmental and social responsibility into their business strategies (Deloitte, 2024). On the consumer side, the pandemic has prompted deeper reflection on many aspects of life, particularly regarding the value attributed to time, material possessions, and daily choices, which impact not only how people buy but also why they do so. Young consumers, in particular, tend to prioritize sustainability in their purchasing decisions, yet at the same time, they are willing to make clear trade-offs in the face of economic uncertainty and inflation (McKinsey, 2024).

The retail model—both traditional and online—has faced increasing criticism, emphasizing the urgency of finding a formula for sustainability that is not only economic but also social and environmental. Many brands have embarked on a journey of awareness, making value-based declarations - some more genuine than others - followed by concrete, feasible, profitable, and appreciated actions. As the retail sector enters a new post-digital phase, it becomes essential to adopt approaches that allow brands to explore and identify strategic actions to navigate an increasingly volatile and rapidly evolving landscape.

2.2 Designerly way of building knowledge

This section discusses the core concept that has guided the research practices and led to the research findings presented in the following section. Specifically, we focus on the unique capacity of designers to 'translate' collected information and data into promising insights and potential strategic directions for developing innovative products, services, and experiences. This capacity has been discussed by design scholars and researchers (Owen, 1998; Kolko, 2010; Dorst, 2015), and has also been examined in the fields of management and innovation studies (Beckman and Barry, 2007; Liedtka, 2015; Calabretta et al., 2016).

Cross (2001) has identified the "designerly way of knowing", which has its own way of building pragmatic knowledge for innovation based on reflective practices, and it is a way of constructing and validating knowledge with specific and original methods, tools, and purposes (Carella et al., 2021). Among all the contributions of design (thinking) to innovation, Kolko (2010) has clearly illustrated the synthesis activities when designers apply the abductive reasoning method to make the best guess on "what might be". This activity was identified by Lawson (1979) as "synthesis", which is different from the analysis in science. The logic inside synthesis has also been studied by Martin (2009), who distinguished ab-

ductive logic from deductive and inductive ones and explained why it is essential for increasing the likelihood of success, especially in the early stage of the R&D process (Magistretti et al., 2021).

In Beckman and Barry's study (2007), design thinking was identified as an essential element embedded in organizations' learning processes. In its second phase, where the company needs to transform the concrete data and information into an understanding of the phenomena, market and social trends, and consumers' behavior's. Design thinking capability contributes to that need by extracting knowledge and generating insights that will then foster the creation of ideas and concepts.

Designers, therefore, carry out research activities differently from other professionals. They select data and information based on specific criteria and logical reasoning (Zurlo, 2019; Pei et al., 2024). They prioritize the collected data according to its significance, and then apply a critical perspective to judge the data, identifying the most relevant and useful elements. Afterwards, designers identify hidden connections and patterns within the data, synthesizing and reinterpreting it through clustering and integration (Schön, 1984; Kolko, 2010). The outcomes of this process are what designers often refer to as 'insights' derived from research. These insights subsequently guide the following phases of the design process, informing brainstorming, ideation, prototyping, testing, and ultimately the implementation of solutions.

3. Approach and methodology

The following chapter explains in detail the approach and methodology adopted in the research work, retracing the entire process, from the setting up of the work to the visualization of the results and their validation.

3.1 Empirical setting

This study has applied a design approach to conduct research activities by collecting, interpreting, and visualizing data, translating the design and research theories into practical design methods and processes. The research primarily relies on collecting and analyzing secondary data from diverse sources and applying abductive reasoning to transform this data into seven trends that suggest promising directions for developing new products, services, and experiences as business offerings. The research process is conducted through collaboration between design researchers and design professionals, combining a rigorous research methodology with a practical perspective and mindset to derive real-impact findings.

3.2 Data collection

The research team conducted qualitative research through desk research in the sector, observing, selecting, and analyzing significant cases and practices implemented by various brands across different industries in Italy and worldwide. The focus was placed particularly on the motivations driving these changes and new initiatives, as well as on how they transform or evolve the relationship with customers.

Firstly, second-hand data about trends and knowledge about the retail sectors and consumers have been collected through desk research, looking at:

- Trend reports from trend research agencies;
- Following webinars organized by a university observatory;
- Both scientific research articles and public reports on retail, technology, and design.

Then, case studies have been collected from the following resources:

- Retail trend websites and reports;
- Trend research websites and reports about consumer behavior;
- Reports of emerging trends and changes in the last 5 years in the retail sector.

The case studies have been selected using the following criteria:

- the case studies had to be innovative and distinctive, not necessarily recent and never futuristic;
- they had to be concrete and realized applications, not necessarily successful;
- they had to have a focus on sustainability thanks to the use of technologies to generate new sustainable scenarios in line with the new attention to responsible consumption.

3.3 Data analysis

Of all the case studies collected, 26 were selected and analyzed in detail by looking at the following elements of interest, previously defined with WIP Italia:

- the use/integration of technology;
- business model evolution;
- new physical and digital touchpoints;
- introduction of new experiences into the purchasing process.

A subsequent activity of grouping and classifying the analyzed cases was conducted, led by inductive reasoning but with the objective to identify the opportunity for new design & business. This activity allowed the identification of seven trends in the sector along with 5 microtrends.

3.4 Results visualization

These trends were presented and visualized in a report, first with a map that also highlights the relationship between them.

Then they were presented in detail through:

- a slogan-like title to give an idea of the content of the trend;

- a short description;
- an illustration, to quickly and synthetically visualize the content of the trend;
- the challenges for brands within that trend;
- the case studies that generated that trend, presented through a specially designed analysis canvas.

Finally, for each trend, takeaways and trigger questions were identified, for a total of 18 takeaways and 21 questions, to inspire brands and companies to rethink their sales strategies, create new ways of engaging with their customers, and innovate their performance in the sector.

3.5 Validate and refine

The following step was to validate and refine the Trends. A free one-hour webinar was organized at the beginning of April 2024 in which the research results were presented by the research team, the Chief Operating Manager, and the Sales Director and Digital Strategist of WIP Italia, reserving the last part of the webinar for questions and observations from the participating audience to obtain feedbacks. The webinar was attended by 67 professionals from companies in different market segments from the following professional categories:

- 30% from Marketing & Communication;
- 25% from Management & Leadership;
- 19% from Sales & Customer Engagement;
- 9% from IT;
- 7% from Retail & Operation;
- 10% from Other professional categories.

4. Results

The first result was the creation of the case study analysis canvas, as shown in Figure 1, used to compare, analyze and present the case studies using the same parameters and layout:

- case study Title;
- name of the referred trend;
- brand that use/own the case study;
- country where the case study is observable;
- brief description;
- keywords to highlight the elements of greatest interest;
- list of features related to the new experience offered;

- list of features related to the new business model, if any;
- list of new touchpoints;
- interesting insights for the retailers;
- 2 or 3 images.

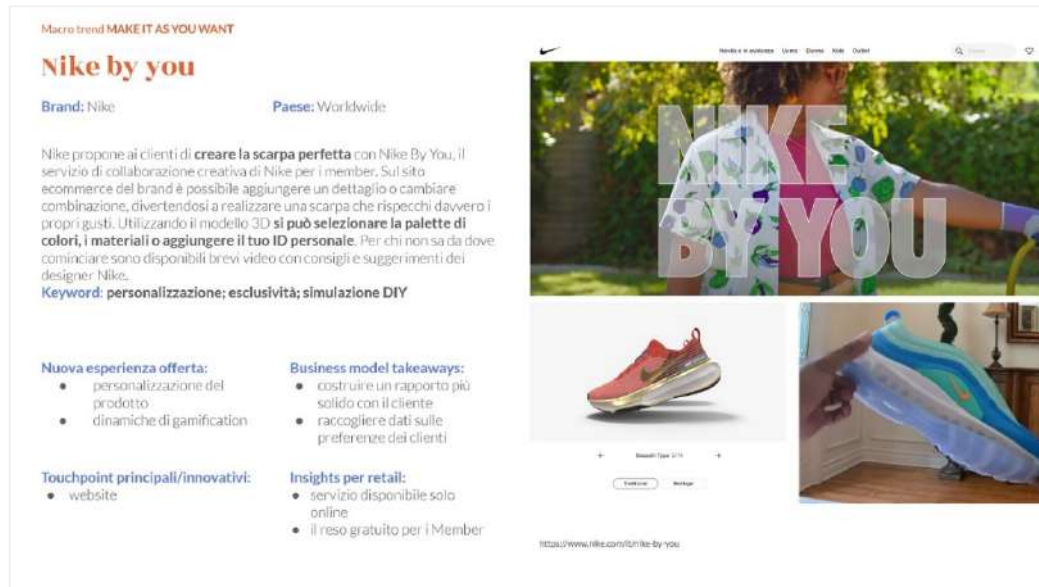


Figure 1 An example of a case study analysis sheet, showing the analysis elements and the layout used.

Thanks to the methodology used, it was possible to identify the following seven trends, as shown in Figure 2:

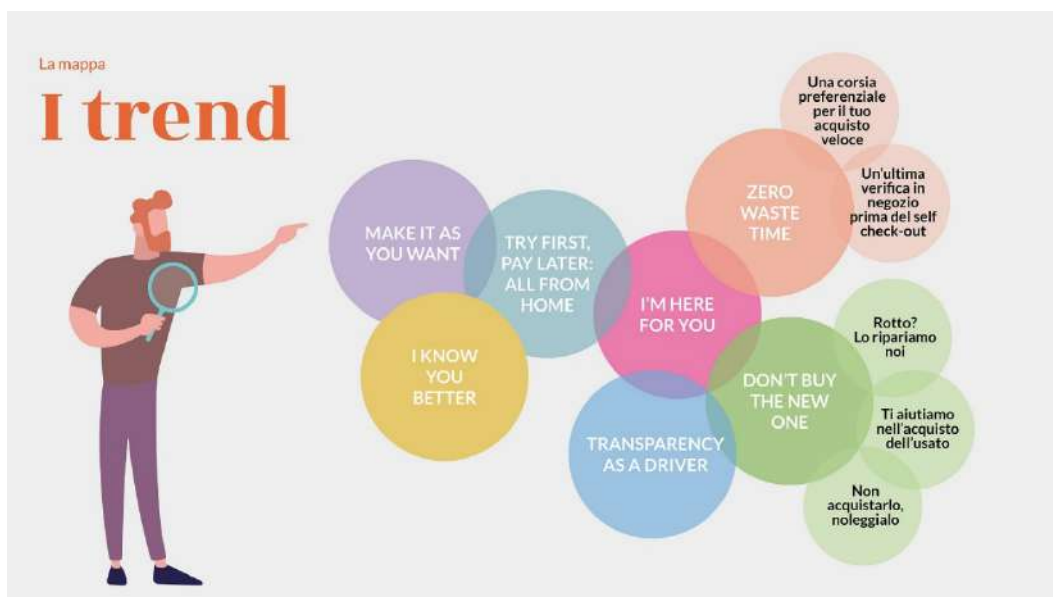


Figure 2 Map of Trends and micro-trends identified. The juxtaposition of Trends is not casual, on the contrary, it highlights the correlation and influence that Trends can have between them.

4.1 Zero waste time

The first trend highlights the growing importance of speed and convenience as key factors shaping consumer preferences in purchasing processes. Specifically, there is a marked shift toward solutions that minimize the time spent and reduce the need for direct interaction with sales staff (Falcão et al., 2021).

This dynamic unfolds in two main operational configurations. The first involves the integration of online and offline shopping experiences, where the physical store serves as a complement to a process initiated in a digital environment, such as a website or mobile app. This omnichannel convergence allows consumers to pick up or finalize a purchase already started, thereby optimizing the overall service experience.

The second configuration focuses on systems designed to promote complete customer autonomy within the physical store. These solutions include self-checkout technologies and shopping journeys guided by mobile applications, enabling users to navigate and complete transactions without the need for staff assistance.

4.2 Make it as you want

Personalization emerges as one of the most effective strategies in the retail context for enhancing customer engagement and increasing the perceived value of a product. Creating personalized shopping experiences helps generate a sense of exclusivity and uniqueness, key elements that positively influence purchasing decisions and foster customer loyalty (Scholdra et al., 2023; Bergius, 2023).

Several leading brands are adopting personalization solutions both in online commerce and physical stores, offering options ranging from customized color selection and the addition of specific accessories to engraving names or initials on the product itself.

4.3 Try first, pay later: all from home

The transposition of the traditional shopping experience from physical stores to the home environment represents one of the most significant innovations in the contemporary retail landscape. This approach, known as home try-on, allows consumers to select a range of products to try on in the comfort of their own homes before finalizing a purchase.

Product selection is often guided by digital platforms that leverage personalization algorithms based on users' style preferences and individual needs. This model represents a modern evolution of home sales, where the presentation, selection, and purchasing phases are entirely mediated by digital tools.

4.4 I know you better

The management and analysis of data represent a fundamental pillar for the future of the retail sector, especially in a context where consumer decision-making processes are becoming increasingly complex and fragmented. The ability to collect, integrate, and interpret data from multiple touchpoints - both digital and physical - is essential for gaining a

deep understanding of customer preferences and needs, thereby facilitating the implementation of personalized and customer-centric strategies (Cui et al., 2019).

Cross-channel data integration enables a range of innovative solutions aimed at optimizing the shopping experience. Among these, Drive-To-Store strategies based on couponing campaigns and targeted promotions provide tailored incentives to drive traffic to physical stores. Additionally, mobile applications leveraging geolocation and push notifications exemplify technologies capable of delivering real-time personalized shopping suggestions, enhancing the relevance and timeliness of promotional communications during the customer's visit to the store.

4.5 I'm here for you

The expansion of touchpoints in the purchasing process is radically transforming customer service dynamics, posing new challenges to traditional interaction models in the retail sector. With the increasing complexity of customer journeys, sales staff often struggle to provide personalized and immediate attention to each customer.

In response to this need, many brands are adopting innovative technologies that automate and optimize the first point of contact in both digital environments and physical stores. The integration of solutions based on conversational artificial intelligence and robotics represents a significant shift (Palmié et al., 2022).

Advanced chatbots, designed to understand and respond to customer inquiries naturally and instantly, enhance the customer experience on online platforms. Similarly, the adoption of robots for welcoming customers in physical stores introduces an element of automation that helps manage incoming traffic more efficiently and provides basic information without the need for immediate human intervention.

4.6 Transparency as a driver

The evolution of consumer preferences, particularly among younger generations, highlights a growing intolerance toward the lack of concrete action on issues such as environmental sustainability, social equity, and cultural diversity. Increasingly, purchasing decisions are driven by brands that align with consumers' personal ethical values and provide transparent access to detailed information about product origins and the sustainable practices they adopt (Röding et al., 2022; Agu et al., 2024).

In this context, transparency emerges as a decisive and strategic factor in influencing customer trust and loyalty. Innovative solutions that integrate transparency as an operational principle include the use of physical products as information providers. In such systems, the product itself becomes a touchpoint capable of delivering digital content, offering details about the origin of raw materials, production processes, and associated ethical or environmental certifications.

4.7 Don't buy a new one

In the current retail landscape, brands are taking on an increasingly central role in raising consumer awareness of sustainable purchasing practices (Agu et al., 2024; Bălan, 2020).

This responsibility is reflected in the adoption of strategies that extend the purchasing process beyond the initial transaction, incorporating after-sales services aimed at prolonging the product's lifecycle while simultaneously strengthening the ongoing relationship with the customer.

Another key direction within this trend is the adoption of solutions that address temporary consumption needs, favouring the rental model over traditional purchasing. This approach promotes a transformation in offerings, steering brands toward product servitization - a paradigm that shifts value from ownership to access. This, in turn, reduces the environmental impact associated with production and consumption, contributing to the overall sustainability of the economic system.

5. Discussion

Once defined, the seven trends were observed cross-functionally to identify actionable items that can be grouped into four potential strategic actions that brands can implement in the retail sector.

5.1 Rethinking the Relationship with the Product

The evolution of the retail sector is redefining the concept of the relationship with the product, making it a central element in creating personalized and lasting connections with consumers. Personalization becomes a key tool for gathering data on individual preferences, allowing brands to offer tailored experiences that integrate gamification strategies to increase engagement.

Artificial intelligence plays a crucial role in this process, both as a means to support purchase decisions in-store and online, and as a tool for personalization, adapting the offering to the customer's needs in real-time.

This ongoing relationship between the consumer and the product requires a smooth and integrated management of physical and digital touchpoints, fostering one-to-one interactions that extend from the store to the online experience through dedicated products. Transparency of information proves to be a strategic element in building a strong reputation, with the product itself becoming a call to action towards digital content and a catalyst for engagement.

Branding and digital interaction benefit from an approach based on a long-term consumption culture, while customer loyalty is strengthened through co-creation models in which the customer actively participates in product development. This integrated cycle of personalization, supported by artificial intelligence and technological innovation, allows brands to transform the product from a simple consumer good to a dynamic tool for creating value and connection with the consumer.

5.2 Rethinking the role of the sale points

The store is taking on an increasingly multifunctional role, transforming into a strategic hub that integrates physical and digital elements to enhance the consumer experience and optimize operational efficiency. The store becomes not only a place for purchases

but also a pickup point for online orders and a space where customers can try products they have digitally reserved before finalizing the purchase.

The adoption of technologies such as self-checkout and vending machines further simplifies the payment process, offering greater autonomy and speed to the consumer. The ability to collect data on user preferences during the in-store experience and integrate them with digital profiles allows for further personalization of future interactions, while the application of digital cross-selling tools within stores opens up new opportunities for increasing sales value.

The use of conversational artificial intelligence to automate the first point of contact and lighten the load on sales staff represents another step toward service efficiency and scalability.

Finally, the store is evolving toward a model of sustainability and circularity, reducing packaging, labels, and additional costs. The store layout can be designed to encourage access to repair services and promote buy-back programs, offering customers the opportunity to resell used products and participate in a more responsible economy. This transformation positions the store not just as a place for transactions, but as an integrated ecosystem of services, experiences, and sustainability.

5.3 Rethinking the role of sales assistant

The evolution of retail is redefining the role of the sales assistant, transforming them into a key element for the integration of autonomous digital experiences and relational interaction. The sales assistant is no longer limited to direct sales; they become a consultant for the relationship, supported by technology and digital tools. They can be consulted as an expert for active support by customers using digital tools independently, both in-store and remotely, offering targeted and personalized assistance.

Similarly, digital tools can relieve the sales assistant of certain tasks, handling the initial customer welcome in-store. In this way, the sales assistant positions themselves as a facilitator of an advanced omnichannel experience, effectively connecting the physical and digital worlds to meet the evolving needs of consumers.

5.4 Generating new touchpoints

The expansion of touchpoints in the retail sector is redefining how brands interact with consumers, creating new opportunities to engage them outside the traditional context of the physical store. Identifying occasional sales contexts allows brands to reach customers wherever they are, reducing the distance between the brand and the consumer while promoting a sense of proximity. This approach integrates with strategies that give the customer time, allowing for a continuous and personalized relationship through promotions tailored to their tastes and the specific moment of purchase.

Artificial intelligence plays a key role in offering product correlation suggestions, optimizing the experience, and fostering targeted and mindful consumption. The relationship between digital platforms and the physical store is further strengthened through the activation of services online that can then be experienced in-store and vice versa. Models such

as rental or subscriptions emerge as relational drivers, extending the interaction cycle between brand and customer and promoting a logic of access rather than ownership.

Finally, promoting responsible consumption not only strengthens the brand's reputation but also fosters the creation of communities focused on product exchange and sharing a sustainable culture. These new touchpoints expand the meaning of the retail experience, transforming it into a dynamic ecosystem of ongoing interactions and relationships.

6. Conclusion and future steps

The research conducted aimed to understand what is happening to retail spaces by identifying examples of solutions already implemented that are useful for analysis. The case studies and mapped trends allowed for the identification of strategic actions that brands can take to respond to changes occurring in the retail sector. The webinar and subsequent discussions with prospects of WIP Italia partially helped validate the mapped trends. Furthermore, some companies that participated in the webinar and downloaded the report confirmed that they used the case studies as a source of inspiration and adopted the trends by integrating them with specific case studies from their sector. A new research to deepen some aspects in a vertical way is planned. This will be the occasion to analyze if and how some of the trends meanwhile have changed.

Subsequently, an online workshop will be planned and organized by WIP Italia to involve its clients and stakeholders in the discussion. The research will become a “platform” for discussion between actors with different roles (academics, professionals) from different industries to receive concrete feedback and develop the strategic actions into new product/service/system actions.

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