



TNP
HARNESS THE UNPREDICTABLE

MASTERING SUPPLY CHAIN MANAGEMENT

IN THE LUXURY FASHION INDUSTRY

Investigating Key Trends and Leading
Practices in the Supply Chain and
Logistics of the Luxury Goods Industry



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Framework of the Study

The luxury goods industry, renowned for its **high-quality, handcrafted items**, is associated with **superior craftsmanship, exclusivity, and a prestigious brand image**. This sector encompasses a wide range of products, including personal luxury goods such as watches, jewelry, apparel, footwear, eyewear, cosmetics, and fragrances. Excluded from this analysis are items like wine and spirits, designer furniture, hospitality services, luxury cars, and products from artisanal or small-scale production.

This article aims to present an **in-depth benchmarking analysis of supply chain and logistics best practices** within the luxury goods sector, focusing specifically on **personal luxury goods**.

Supply Chain in the Luxury Fashion Industry

In the context of the luxury industry, the supply chain refers to the set of processes and activities related to the design, manufacturing, distribution, and sale of luxury products, ensuring to meet **high standards in terms of quality, exclusivity, and responsiveness to changing market trends**.

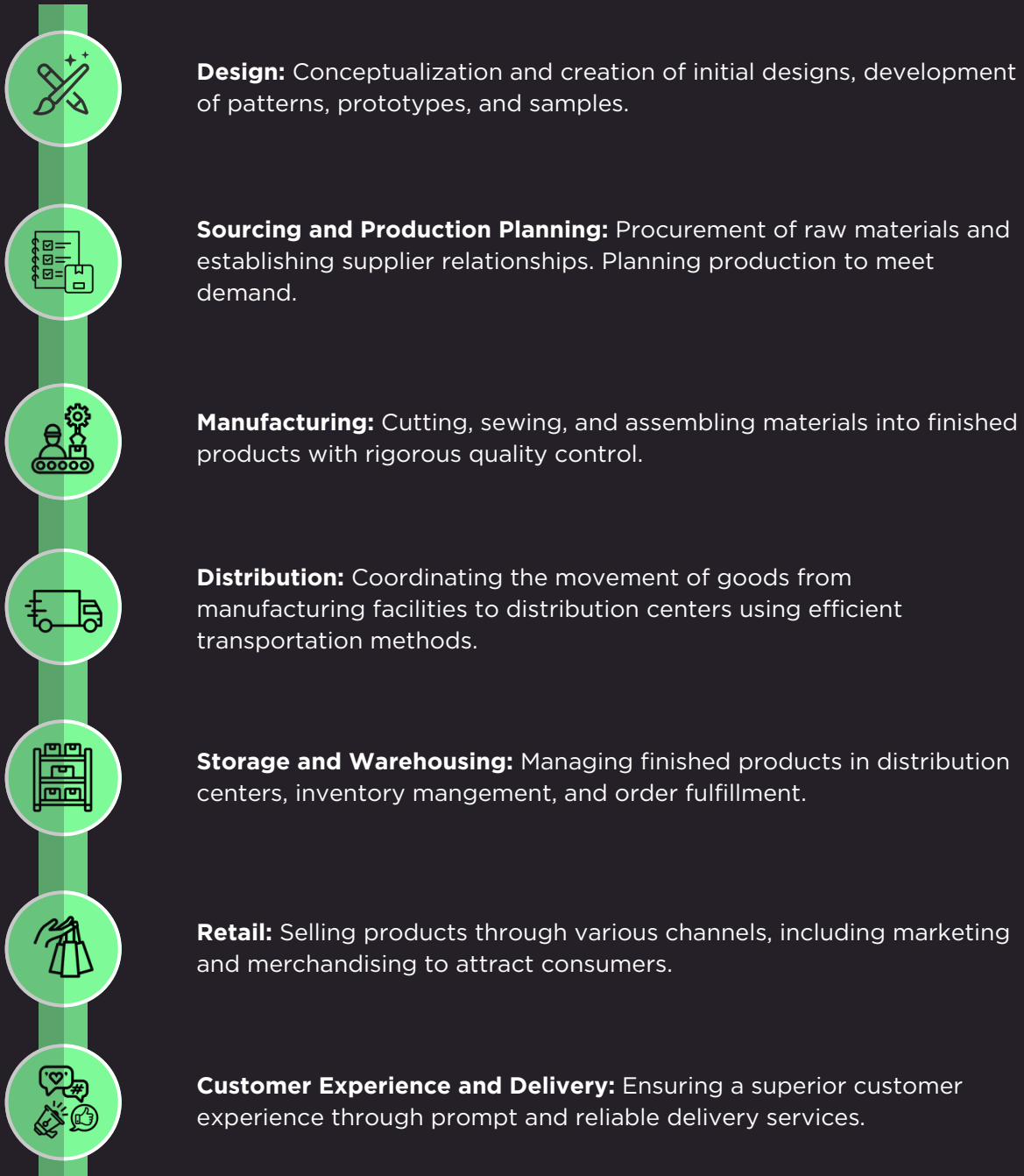
The imperatives in supply chain management revolve around achieving objectives such as **low-carbon footprint, cost-effectiveness, and faster delivery**.

The luxury fashion sector poses unique challenges in managing both production and logistics due to several distinctive characteristics:

- **SHORT PRODUCT LIFECYCLE**
- **UNPREDICTABLE CUSTOMER DEMAND**
- **IMPULSIVE PURCHASING BEHAVIOR**

KEY STAGES OF THE LUXURY FASHION SUPPLY CHAIN

The luxury fashion supply chain is a complex and meticulously managed process that ensures high-quality products reach discerning consumers. Each stage is critical in **maintaining the brand's reputation and meeting customer expectations**. Here are the key stages of the luxury fashion supply chain:

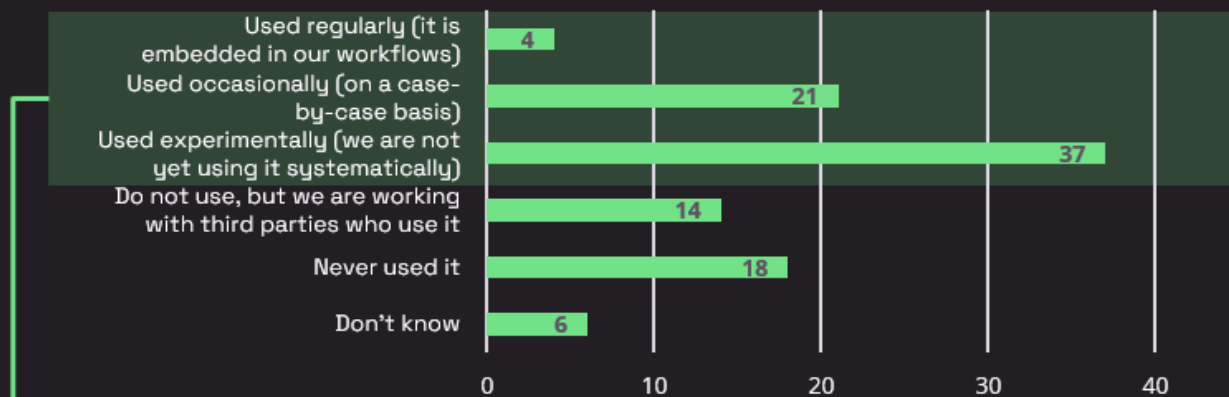


DESIGN - THE RISE OF GEN AI IN FASHION

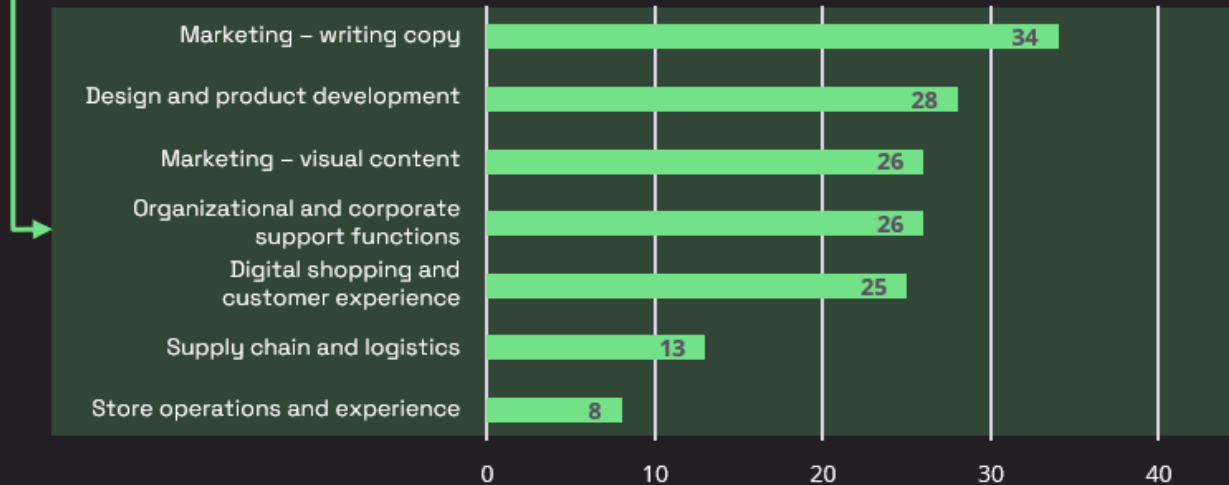
After generative AI's breakout year in 2023, use cases are emerging across creative industries.

Capturing the value of this transformative technology in the coming years will require fashion players to **look beyond automation and explore its potential to augment the work of human creatives.**

Adoption of Gen AI in the workplace (% of respondents)



Use cases (% of respondents)



Use Cases

Some companies rely on AI to produce graphic material used to promote the brand. **Casablanca** partnered with an AI artist and used the image generator Midjourney to create a campaign. This approach resulted in **efficiency gains and cost savings**. Others are using AI to enhance the graphists' work. **AiDA** is a software capable of **producing dozens of fashion templates within seconds** based on sketches and color palettes, exemplifies the power of AI in fashion. Similarly, **Cala**, a fashion supply chain interface utilizing generative AI in its design tools, can help designers produce **up to 100 sketches in a day**, according to co-founder Andrew Wyatt.

SOURCING AND PRODUCTION PLANNING - UNDERGOING TRANSFORMATIONS

Sourcing and production planning in the luxury supply chain increasingly emphasize sustainability, innovation, and advanced digital technologies.

Luxury fashion brands are focusing on **sourcing eco-friendly materials** (such as vegan leather and organic cotton), implementing **ethical labor practices**, and **reducing carbon footprints** in manufacturing and distribution. Louis Vuitton has expanded its production facilities in France, highlighting craftsmanship and heritage while meeting European market demand for locally made luxury goods.

In addition to these sustainability efforts, **collaboration between luxury brands, suppliers, and stakeholders drives innovation, shares best practices, and addresses common sustainability challenges.** For example, Stella McCartney's partnership with Bolt Threads aims to create a sustainable alternative to silk using lab-grown spider silk proteins.

Furthermore, the integration of digital technologies like **blockchain** has become more prevalent, **enhancing transparency, streamlining operations, and improving traceability** from raw materials to end consumers. LVMH, in collaboration with other luxury brands, has developed the Aura Blockchain Consortium, creating the first global luxury blockchain. This initiative includes Digital Product Passports (DPP), which collect and share product data throughout its lifecycle, illustrating a product's sustainability, environmental, and recyclability attributes.



DISTRIBUTION - A TECHNOLOGICAL TRANSFORMATION

Ensuring the safe and timely delivery of luxury goods involves meticulous planning and advanced technological solutions.



“AI in supply chain management doesn’t just upgrade the sector’s effectiveness; it is a paradigm shift that turns coping with operational challenges into proactive strategies.”

AI-driven supply chain optimization helps ensure that luxury products reach the market in a **timely and cost-efficient manner**. Through predictive modeling, algorithms can assess the most efficient shipping routes and even predict potential supply chain disruptions.

“IoT solutions transform supply chain management by providing real-time tracking, monitoring, and predictive analytics capabilities.”

Internet of Things (IoT) enable continuous location tracking of shipments and monitoring of storage conditions like temperature and humidity. Warehouse automation streamlines inventory management and safety monitoring, while loading and unloading operations benefit from IoT-enabled processes, reducing labor and time-intensive tasks. Overall, IoT enhances **efficiency, safety, and reliability** in the supply chain.

“Shipping luxury items across borders is a multifaceted endeavor that demands meticulous attention to detail.”

Luxury items require **specific packaging** due to their value, size, and material nature, with customizable options such as specialized trunks or standing wardrobe boxes to ensure secure transport. Ensuring **transportation security** is crucial, with on-board courier (OBC) hand-carry services providing the highest level of security, as couriers accompany luxury items throughout the journey, ensuring proper handling and prompt arrival.

SORTAGE AND WAREHOUSING - THE KEY ROLE OF AUTOMATION

Ensuring the safe and timely delivery of luxury goods involves meticulous planning and advanced technological solutions.

Automation is becoming central for companies in the luxury industry supply chain, offering significant benefits such as **increased efficiency, reduced human error, and enhanced accuracy** across various stages including receiving and sorting, storage, order management, picking, and packaging and shipping.

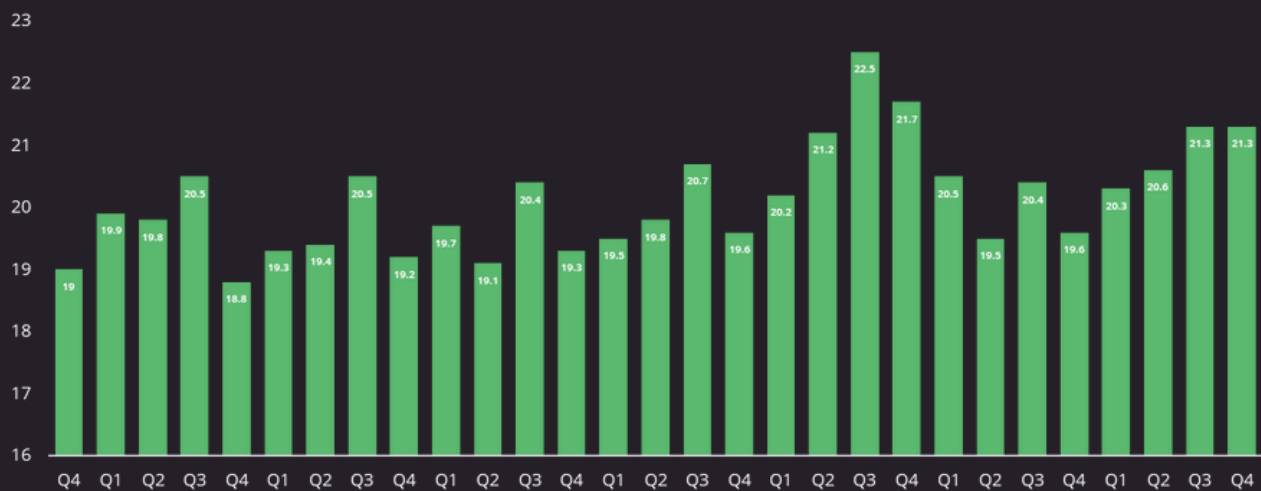
Process	Explanation	Automation
Receiving and sorting	Product are received into the warehouse from multiple sources such as suppliers, manufacturers, returns, etc.	Automate with conveyors, barcode readers, WMS automated sorting systems using conveyers and camera scanners, GTP systems.
Put-away and storage	After sorting, SKUs are put away for storage into pallets or shelves within the warehouse or relocated by cross docking to other storage facilities.	Automate with WMS, scanners, ASRS systems, GTP systems, AMRs, AGVs.
Order management system	While a WMS (warehouse management system) facilitates automation of operations within the warehouse, an OMS (order management system) connects the storefront to the inventory in the warehouse.	Automate with Digital technologies like Cloud and AI to reflect instantaneous stock updates across consumer touchpoints.
Picking	Items are retrieved from the storage systems and packed for shipping. Without automation, this is prone to human errors occurring as a result of manually ticking off a pick sheet or using handheld scanners.	Automate with pick to light put to light systems, voice picking and tasking, AGVs, AMRs.
Packing and shipping	Once products are picked, they need to be packed in the most suitable packaging material with minimum environmental impact. Packages are then weighed, labelled and shipped.	Automate with OMS to convey delivery details to the cartier followed by purchase and printing of labels for each order, automated carbonisation, AGVs, AMRs.

SORTAGE AND WAREHOUSING - RISING STOCK LEVELS

In 2022, inventory levels escalated above pre-pandemic historical records.

The pandemic caused a significant increase in inventory levels due to changes in consumer behavior and supply chain disruptions.

Inventory value of luxury companies as a percentage of revenues by quarter, 2015-2022 (%)



In 2021, inventory value-to-revenue levels returned to the pre-pandemic average. However, in 2022, inventory levels rose again due to economic pressures and continued supply chain disruptions, **exceeding pre-pandemic levels**. The fourth quarter of 2022 presented a concerning situation as the traditional holiday-season inventory clear-out **failed to materialize**. The luxury segment maintained higher inventory levels compared to non-luxury segments, peaking during the pandemic but scaling back post-pandemic. In contrast, non-luxury segments faced inventory challenges during the pandemic and remained bloated in 2022 due to **unpredictable consumer demand**. This surplus inventory created **opportunities for off-price retailers**, although they faced their own inventory management hurdles.

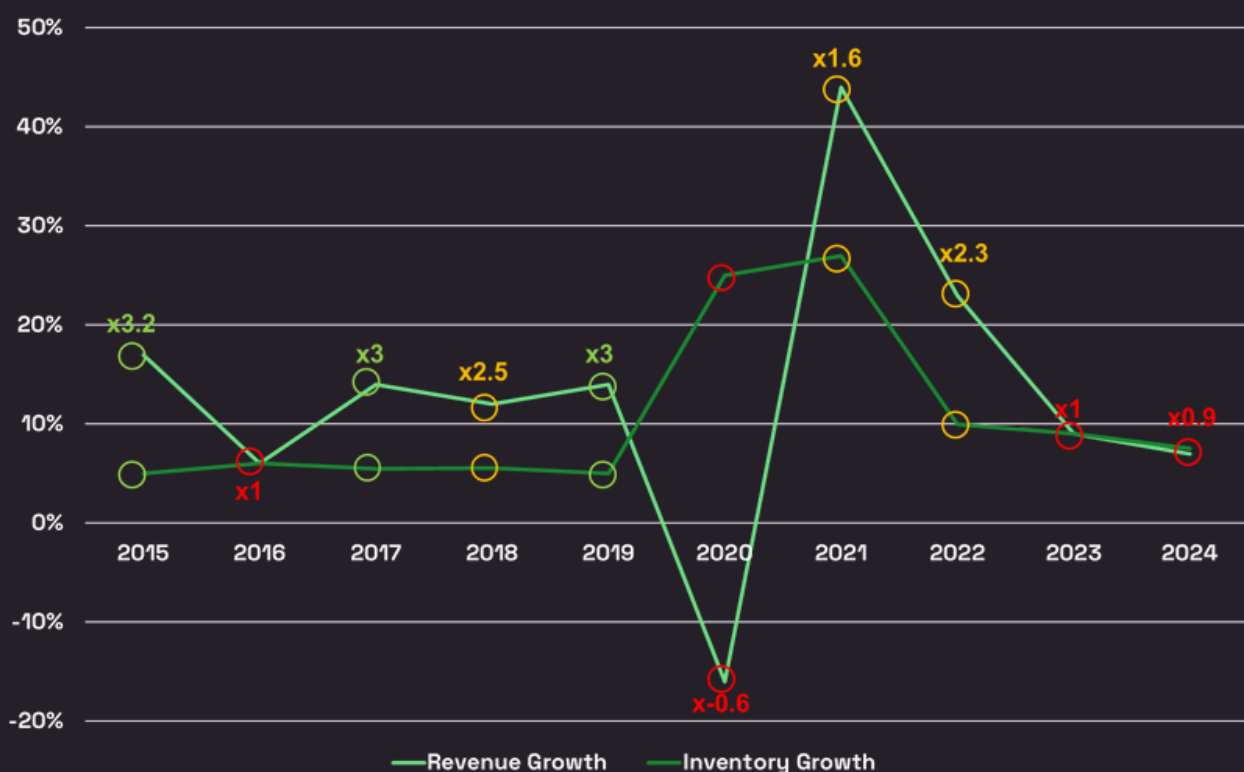
LUXURY FASHION COMPANY AND THE INVENTORY MANAGEMENT DILEMMA: A LESSON FOR LUXURY

In 2022, a luxury fashion company, faced challenges related to unsold stock. Several factors contributed to this issue, although it is essential to note that the company overall remained profitable and resilient, even as global economic conditions fluctuated. The unsold stock problem highlighted some complexities that large luxury brands face, particularly in a post-pandemic world.

Inventory and Revenue: A Worrisome Imbalance

For the past two years, the company's inventory growth has outpaced its revenue growth. In 2023, the group held \$3.5 billion in excess inventory, a 19% increase from the previous year. This isn't merely an anomaly; it's a clear sign of an imbalance in supply chain management.

A simple rule for maintaining healthy inventory levels is that revenue growth should be at least 2.5 times the rate of inventory growth. However, for the company, this ratio has remained below 2.5 over the past four years. This indicates that inventory is growing faster than sales—a classic symptom of poor demand forecasting or inefficient inventory management.



Product Diversification: A Double-Edged Sword

One of the main causes of this imbalance is the rapid expansion of product lines. The fashion luxury company is no longer just a brand known for its iconic handbags. Over time, the brand has expanded into more casual products, such as surf shorts, flip-flops, and hoodies, in an effort to capture a broader customer base, particularly in emerging markets like China.

While this diversification has helped increase the brand's reach, it has also significantly complicated inventory management. More products mean more SKUs to manage, more complex demand forecasts, and a greater risk of overstock. Unlike fast fashion brands such as Zara, the company cannot simply clear out excess stock through discounts without damaging its prestigious brand image. This makes managing unsold inventory particularly challenging.

Artificial Intelligence: A Potential Solution for the Supply Chain

In response to this challenge, the fashion luxury company are turning to technological solutions to optimize their supply chains. Artificial intelligence (AI), especially generative AI, is starting to play a crucial role in improving inventory management. By analyzing real-time data, AI can help more accurately forecast demand, optimize the distribution of stock across warehouses, and reduce the risks of over- or understocking.

According to its Chief Information Officer, these technologies also allow for more agile inventory management, responding quickly to global demand fluctuations. In an increasingly unpredictable market, this flexibility becomes essential. (cf: [Could generative AI solve fashion's excess stock problems? | Vogue Business](#))



Simplifying the Product Line: A Potential Strategy

In addition to technological solutions, the company could consider simplifying its product offering. By reducing the size of its collections and focusing on a smaller number of products, the brand could better control its inventory, improve demand forecasting, and reduce the risks of excess stock.

This strategy could also reinforce the brand's exclusive positioning by limiting dispersion across less profitable product lines. However, such a simplification would require rethinking the product strategy, especially in growing markets like Asia, where the appetite for new products remains high. But by streamlining its offerings, The company could regain more effective inventory management while maintaining its premium brand image.

Conclusion: Regaining Balance to Avoid Saturation

This case illustrates the challenges that major luxury brands face in inventory management. Rapid product line expansion, while attractive from a marketing perspective, can quickly lead to excessive inventory buildup if not properly controlled.

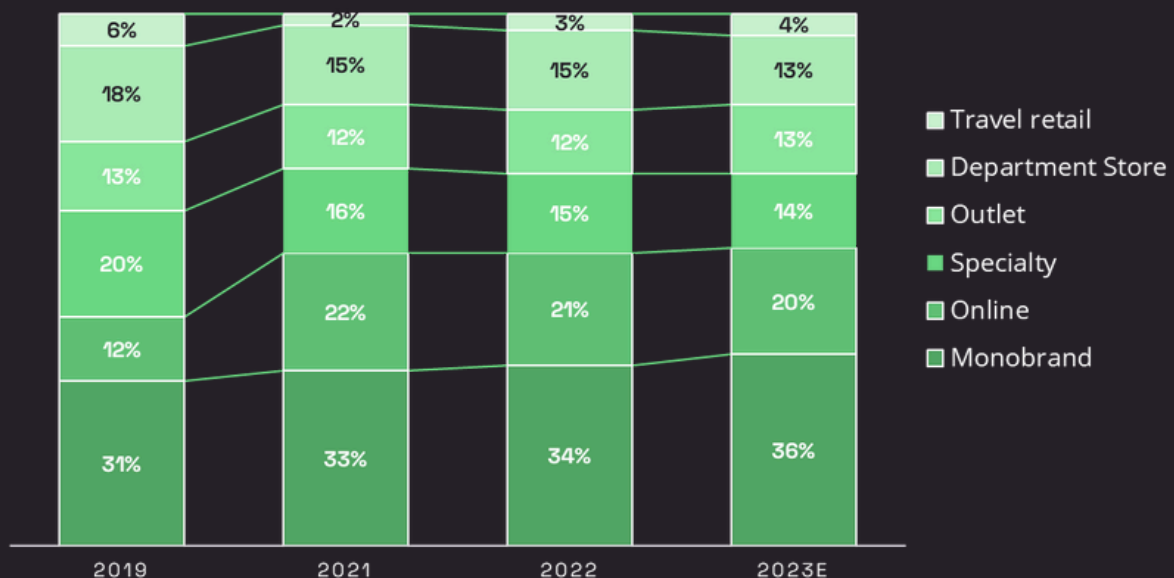
Optimizing inventory through artificial intelligence is a promising avenue to overcome these obstacles, but a complementary approach could also be to streamline the product line. As an industry leader, the fashion luxury company could redefine the standards of inventory management in the luxury sector by striking a balance between product innovation and operational efficiency.



RETAIL - STRATEGIC SHIFTS IN LUXURY DISTRIBUTION

Monobrand stores experienced significant growth, driven by consumers' desire for in-person shopping experiences. Although travel retail saw a resurgence, it has yet to return to the levels observed in 2019.

GLOBAL PERSONAL LUXURY GOODS MARKET, BY DISTRIBUTION CHANNEL AND FORMAT, 2019 - 2023E



Luxury brands are tightening their grip on distribution, **increasingly favoring direct channels**. In 2023, for the first time, the retail channel's share surpassed that of wholesale, reaching 52% compared to 48% for the latter. This shift highlights a strategy aimed at **optimizing the customer experience and maintaining a closer relationship with consumers**.

Monobrand stores saw a growth of about 11%, driven by customers **returning to physical shopping**. Nevertheless, customer journeys are becoming **hybrid, integrating both physical and digital touchpoints**. Although net store openings have dropped by 40% to 45% compared to pre-pandemic trends, brands are investing in increasing store sizes to provide **more immersive and engaging shopping experiences**.

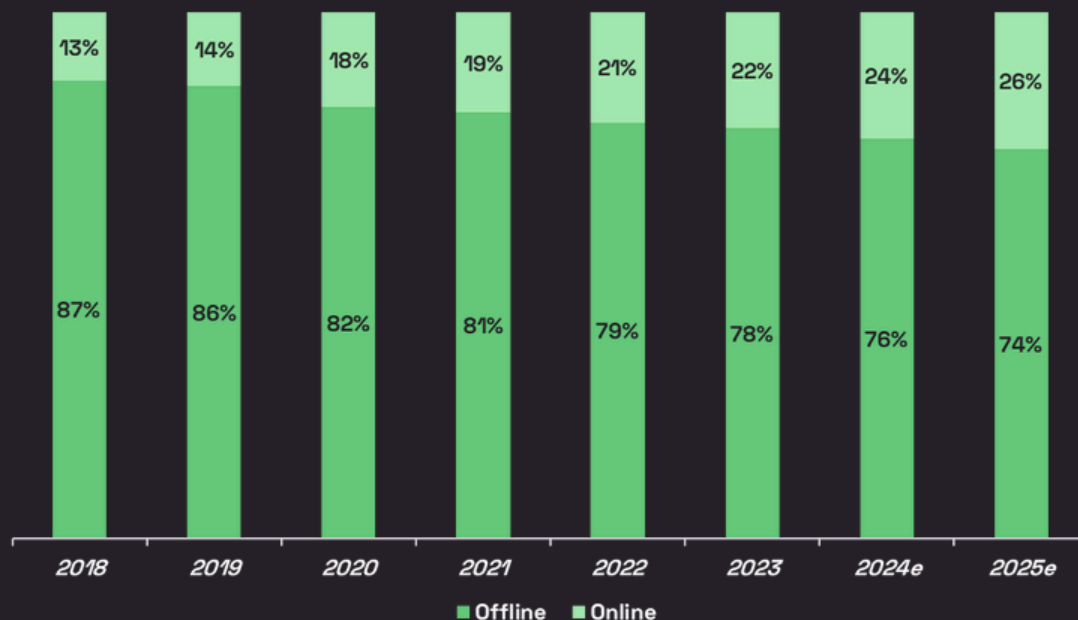
Following years of restrictions, **consumers now prefer physical interactions, leading to a slowdown in the growth of the online channel and a slight decrease in its market share to around 20%**. In this context, the growth of monobrand websites has stabilized, while online retailers have intensified promotions to boost sales.

Department and specialty stores are facing difficulties due to uncertain value propositions, **resulting in high inventory levels and significant markdowns**. In contrast, **travel retail has rebounded with the return of international tourists**, and the off-price channel has thrived, supported by excess inventory and consumers seeking good deals.

CONSUMER EXPERIENCE AND DELIVERY - THE RETURN ISSUE

Luxury companies adopt a customer-centric approach, emphasizing customer satisfaction at every stage of the supply chain. This translates into strategies such as managing returns, develop post purchase activities and a high-end customer service.

Luxury brands are facing a surge in returns as **consumer spending online keep increasing**.

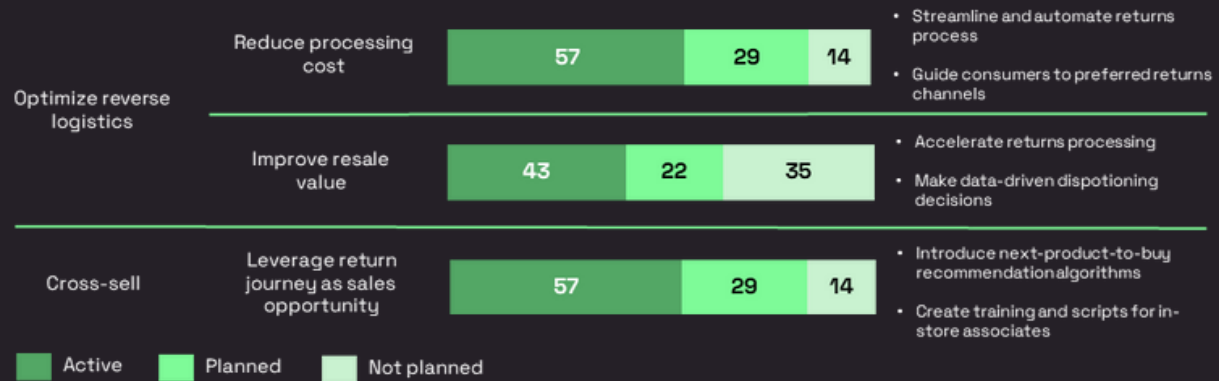


Clothing is particularly prone to e-commerce returns, and especially apparel which is prone to “bracketing”, ordering the same item in multiple sizes to return what doesn’t fit.

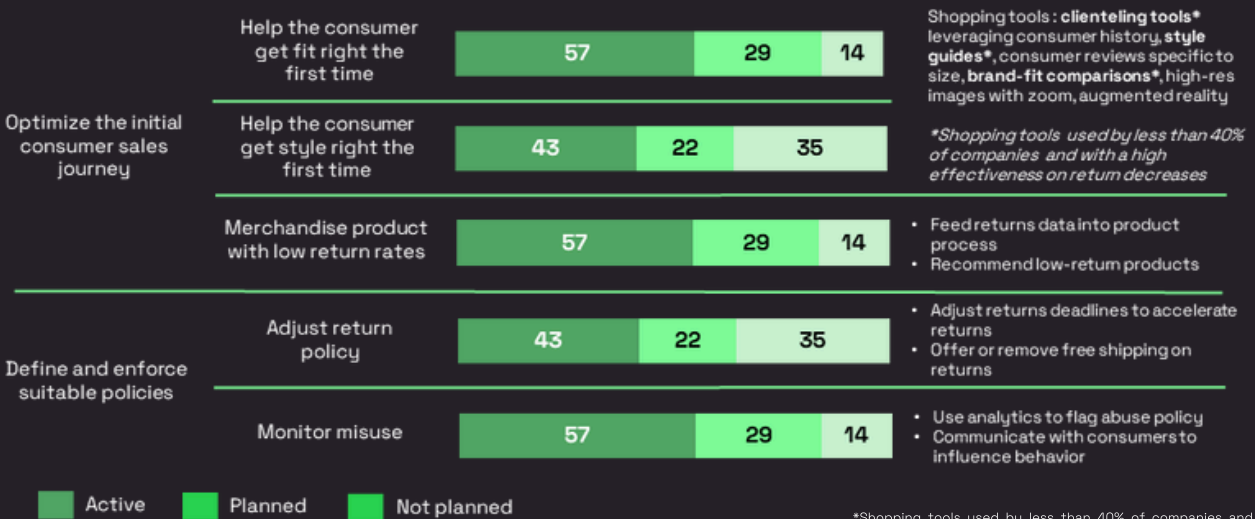
Managing returns is a key strategic point as those are **expensive** and require **complex logistic processes**. Companies are thus focusing on two main axes : **improving return economics** and **reducing their number**.

CONSUMER EXPERIENCE AND DELIVERY - THE RETURN ISSUE

IMPROVE RETURN ECONOMICS



REDUCE THE NUMBER OF RETURNS



CONCLUSION

Luxury fashion brands face unique challenges due to short product life cycles, unpredictable customer demand, and impulsive purchasing behavior. Each stage of the supply chain—from design and sourcing to production and distribution—is meticulously managed to maintain brand reputation and meet customer expectations. Moreover, brands are investing in larger store sizes and enhancing the customer experience through more immersive shopping journeys.

The sector is also witnessing a strategic shift towards sustainability, with brands focusing on eco-friendly materials, ethical labor practices, and reducing carbon footprints. Digital technologies like blockchain are being integrated to enhance transparency and traceability, while AI-driven supply chain optimization ensures timely and cost-efficient market delivery.

Innovative production methods, such as 3D printing, are enabling more flexible and localized manufacturing, reducing the need for large inventories and allowing for customization. Vertical integration provides brands with greater control over quality and innovation, while IoT and automation enhance efficiency and reliability across the supply chain.

Despite the recent deceleration in online channel growth as consumers return to physical stores, the hybrid nature of customer journeys is becoming more prominent. The off-price channel thrives due to surplus inventory, while department and specialty stores struggle with high inventory levels and markdowns.

In conclusion, luxury brands are navigating a complex landscape by tightening control over distribution, leveraging technology for supply chain optimization, and embracing sustainability. These strategic shifts not only help maintain their competitive edge but also ensure they continue to meet the evolving demands of discerning consumers.



About TNP Consultants

Founded in 2007, TNP Consultants is a European consulting firm specializing in the strategic, operational, digital and regulatory transformation of companies. TNP operates in the fashion and luxury, insurance, banking, transport, energy, automotive and public sectors. Its teams are currently present in three geographical zones: continental Europe (France, Luxembourg, Italy, Switzerland, Germany, Monaco), Africa (Morocco, Tunisia, Ivory Coast), Asia and the Middle East (India, United Arab Emirates).



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