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1. Executive Summary

This report focuses on three specific regions in Europe: Croatia, Greece (Central Macedonia), and Italy (Emilia-Romagna Region).

The report's objective is to comprehensively analyze the fashion and design landscape, encompassing market trends, technology, business models, sustainability, and intellectual property. It explores emerging technologies, innovations, and disruptive trends, assessing their potential impact and implications. Business models like e-commerce and circular approaches are scrutinized, with a focus on intellectual property protection and management.

Methodologically, case studies, online surveys, and data analysis were conducted.

The fashion and design industry has a rich history, dating back to the establishment of the first fashion house by Charles Frederick Worth in 1826. Over time, this industry has evolved significantly, driven by changing societal norms, technological advancements, and artistic influences. The rise of industrialization and mass production during the 18th and 19th centuries brought clothing accessibility to a broader population, leading to the emergence of ready-to-wear fashion. The 20th century saw the rise of fashion capitals like Paris, Milan, New York, and London, where haute couture became synonymous with luxury and craftsmanship.

Globalization and fast fashion have transformed the industry in recent times, making it accessible on a global scale but also raising concerns about environmental impact and ethical practices. Sustainability and ethics have gained prominence, prompting many designers to adopt eco-friendly materials, fair labour practices, and circular economy principles.

Digital transformation has revolutionized consumer behaviour and shopping experiences. E-commerce platforms and influencer marketing have become powerful tools for brand promotion and engagement. Technology has also permeated the design process, with the integration of software and digital craft technologies like 3D printing and additive manufacturing.

The fashion industry stands as a cornerstone of the global economy, rivalling the GDP of major nations.

Before the pandemic, the fashion industry generated \$1.7 trillion to \$2.5 trillion in revenue. The world's largest retail markets, including China, the US, and the UK, played pivotal roles. The pandemic led to a temporary setback, but post-lockdown recovery saw the industry rebound to pre-pandemic levels.

In this global landscape, e-commerce emerged as a powerful force. Online sales skyrocketed to \$4.2 trillion in 2020, with an estimated 2.14 billion online shoppers. Projections indicate that the e-commerce trend will continue, reaching \$7 trillion in global online retail sales by 2025.

Despite challenges such as inflation and geopolitical uncertainties, fashion companies exhibited resilience, experiencing revenue growth and margin expansion.

European households exhibit substantial consumption of textile products, with 2020 witnessing a consumption of 6.6 million tons of textiles. The EU Environment Agency highlights textiles as the fourth major contributor to environmental impact within Europe, trailing behind food, housing, and transport. Clothing expenditure in the European Union amounted to 220 billion euros in 2020. Europe is also a hub for luxury fashion, with Italy and France leading in production, and the e-commerce sector has experienced a surge, particularly in clothing and accessories.

Consumer behaviour in the fashion industry is undergoing significant shifts, with a notable rise in online clothing purchases, especially in the category of clothing, shoes, and accessories. The demand for sustainable fashion is rising, driven by awareness of environmental and social impacts, with consumers willing to pay more for ethical products. Amid potential economic turbulence, consumer spending patterns are diverging, and gender-fluid fashion and reinvented formal wear are gaining prominence, prompting fashion brands to adapt their strategies to cater to evolving preferences.

The luxury fashion industry is witnessing a strategic shift as brands collaborate to secure stakes in their suppliers, ensuring consistent access to high-quality raw materials and better supply chain oversight.

Digitalization continues to reshape the fashion landscape, with emerging trends gaining prominence. Second-hand clothing is projected to account for 10% of the global apparel market by 2024, fostering sustainability and reduced waste. The integration of 3D visualization and martech technologies is revolutionizing the jewellery industry, offering consumers virtual try-on experiences and customization options. The Metaverse trend is transforming fashion engagement through immersive experiences, virtual fashion shows, and interactive campaigns. Brands are leveraging this trend to build stronger customer relationships, enhance brand loyalty, and merge physical and virtual realms.

As digital commerce evolves, brands are adapting their strategies. Direct-to-consumer models face challenges, prompting diversification of channel mixes to include wholesale and third-party marketplaces. Creative and innovative approaches are necessary in digital marketing due to changing customer targeting dynamics. The influence of social media and evolving technologies like the Metaverse is altering how brands engage with customers. Brands are exploring metaverse commerce, selling unique digital goods, and utilizing non-fungible tokens (NFTs) to offer virtual products and experiences. This innovation is reshaping marketing and customer experiences, creating new opportunities for brand recognition and loyalty.

The fashion and design industry, known for its creativity and adaptability, is undergoing a transformative journey driven by technological advancements. These innovations are reshaping every facet of the industry, from design to manufacturing, marketing, and consumption. Artificial Intelligence (AI) stands as a cornerstone, enhancing design processes, enabling personalized recommendations, optimizing production, and elevating the virtual try-on experience. Virtual and Augmented Reality (VR/AR) bring immersive shopping experiences, virtual showrooms, and enhanced design visualization. IoT introduces smart clothing with biometric sensors, real-time supply chain monitoring, and eco-friendly materials, catering to sustainable and personalized fashion. The rise of interactive and sustainable materials further pushes boundaries, allowing dynamic and customized designs while 3D printing adds intricacy and customization, streamlining design-to-production workflows. This comprehensive overview underscores the fusion of technology and fashion, unlocking novel opportunities, enriching customer experiences, and paving the path for a dynamic and innovative industry landscape.

Digital transformation and innovation present transformative prospects for sustainability in the fashion and design domains. Technology's role in material innovation, waste reduction, energy efficiency, and circular economy approaches can lead to environmentally responsible practices. Bio-based materials, 3D scanning, AI-driven supply chain management, and blockchain-enabled traceability offer avenues for reducing environmental impact. These advances empower the industry to minimize waste, optimize energy usage, and foster a circular economy, driving a more sustainable future for fashion and design.

The fashion and design industry are witnessing a shift towards innovative business models that prioritize sustainability. Resale, rental, repairs, and remaking are gaining prominence, aiming to reduce greenhouse gas emissions and waste. According to the Ellen MacArthur Foundation, these models could represent 23% of the global fashion market by 2030, worth USD 700 billion. Despite challenges like the Covid-19 pandemic and profit declines, circular fashion models show promise. Rental, resale, repair, and remaking platforms like Depop and Rent the Runway are already valued at billions. These models offer environmental benefits and

revenue growth. However, transitioning to circularity requires addressing industry barriers, including redefining success metrics, design for durability, and supply chain transparency. Through circularity, fashion and design businesses can create a positive impact on both the environment and the industry's economic landscape.

Copyright and intellectual property (IP) rights are vital safeguards in the fashion and design sector, shielding creators' original concepts, designs, and innovations from infringement. Legal protection not only empowers designers to monetize their creations, attract investments, and establish distinctive brand identities but also fosters equitable competition and cultivates a culture of innovation.

Co-design and co-development methodologies present challenges in managing copyright and IP, as shared efforts complicate ownership determination and confidentiality protection. Overcoming these challenges necessitates well-defined collaboration agreements, addressing copyright ownership, usage rights, confidentiality, and dispute resolution mechanisms.

Other intellectual property mechanisms, like industrial design, trademarks, patents, and trade secrets, contribute to safeguarding various aspects of the fashion industry. A comprehensive approach integrates clear agreements, non-disclosure measures, meticulous documentation, open communication, and stakeholder education, fostering respect for intellectual property rights, minimizing disputes, and nurturing ethical collaboration in the fashion and design sector.

2. Introduction

2.1. Background on the fashion and design industry

Fashion designing is the art of applying design, aesthetics, and clothing construction to clothes and accessories. Everything started in 1826., with Charles Frederick Worth (the first fashion designer of the world) who set up the first fashion house in Paris. Back then he was the first one who was telling his customers what kind of clothing suits them best. At the beginning of the 20th century became the fashion capital, and by the end of the 20th century, people were more aware of the fashion and definition of their style (Fibre2Fashion, 2008).

The fashion and design industries have come a long way to be where they are today. They have been shaped over time under the influence of different trends, and now digital transformation brings something new to the sector.

Since ancient times clothing and adornment have been part of human culture serving functional, cultural purposes. They have also been responses to changing societal norms, technological advancements, and artistic influence in Industrialization and Mass Production. The mechanization of textile production, along with the development of sewing machines and factories, enabled mass production of clothing as a consequence of the Industrial Revolution in the 18th and 19th centuries. This makes fashion more accessible to a broader population and a rise in ready-to-wear fashion.

In the late 19th and early 20th centuries Paris, Milan, New York, and London become centres of creativity and fashion. In this period haute couture became synonymous with luxury and craftsmanship, with designers creating one-of-a-kind garments for wealthy clients. The fashion weeks and industry events provided a platform for designers, brands, and industry professionals to showcase their work and network. Advances in transportation, communication, and trade opened the market and supply chains worldwide in the late 20th and early 21st centuries. All this changed fashion trends and there was a rise in fast fashion. This was a period of Globalization and Fast fashion, which is present to this day.

Globalization and fast fashion have affected the environment and social values, so it was inevitable that lately there has been an emphasis on sustainability and ethics. Many designers are incorporating eco-friendly materials, promoting fair labor practices, and embracing circular economy principles. Digital transformation has also revolutionized the way customers shop. There are numerous e-commerce platforms through which customers can purchase goods. There are also social networks, especially influencer marketing, which have become a powerful tool for brand promotion and consumer engagement.

There is a wide range of options for a designer to choose from, such as lingerie, swimwear, women's wear, bridal wear, children's wear, men's wear, footwear, handbags, etc. In recent times there has been increased use of computers and technology from software that helps in the process of designing as well as other stages in production.

The analysis pointed out the country and sector-specific remarks and a general overview, though data were sometimes difficult to compare due to the lack of a common data source framework.

- **CROATIA:** around 4.560 SMEs are working on fashion and design (14% of CCS), not including freelance and self-employed professionals. The sector can rely on good, competitive quality designers offering their services outside the border. Nevertheless, they are limited by size; they also suffer a lack of skills for business competencies to manage their professional activity and an interdisciplinary approach and cross-sectoral connections, there is a scarce internationalization activity and weak promotion of CCI industries leading to a negative entrepreneurial spirit. Copyright issues are also critical. As for process and networking expertise, there is a need for knowledge of digital craft technologies such as digital fabrication, 3D Printing, and Additive Manufacturing.

- **GREECE:** “Fashion & Textiles” is a priority sector of the Smart Specialization Strategy in the Region of Central Macedonia (RCM), which represents 40% of the Greek textile companies and 65% of the national textile exports. Main needs are related to Business and Professional skills, such as innovative thinking, collaboration, communication, marketing, problem-solving, innovation, risk management, etc.; Digital skills, such as familiarity with new platforms and technologies, social media, business tools, etc.; Technical skills, such as new technical tools, new trends of the respective profession, etc; Intellectual property protections skills; Soft skills, such as self-management, loyalty, flexibility/adaptability, etc.
- **ITALY** (Emilia-Romagna Region): the regional F&D sector counts 69.000 operators (with most freelancers, entrepreneurs, and self-employed workers) and 16.000 organizations, the whole CCS consisting of 34.682 organizations and 89.355 operators (Emilia Romagna represents about 8% of Italian creative economy). Design is a highly developed and structured sector with a large presence of developed and advanced micro and small businesses distributed across all the regional territory. Weaknesses detected are a scarce attitude of operators to adopt proper marketing and management practices and a tendency to work within the boundaries of close local networks and communities. The Region has a particular interest in connecting design to high-growth industries as a base to imagine, create, and develop their new products and solutions.

2.2. Purpose of the report

Sectoral overview and mapping of best practices include market trends, technological opportunities, new business models, sustainability options, intellectual property issues, and needs raised from the surveys.

The purpose is to provide an in-depth analysis of the market dynamics within the sector, including the size, growth rate, and key trends. Each partner carries out desk analysis on the local state-of-the-art.

This sector is dynamic and influenced by various market trends that shape its growth and development. Market trends will provide an in-depth analysis of the market dynamics within the sector, including the size, growth rate, and key trends. These trends shape the fashion and design industry, creating opportunities for brands to innovate, differentiate and meet evolving consumer demands. Therefore, consumer behaviour and changing preferences will be analyzed as well as emerging markets and opportunities.

This report will highlight emerging technologies, innovations, and disruptive trends within the industry. It will assess their potential impact, adoption rate, and implications for the sector’s future growth and competitiveness. The report will give an overview of technological trends in the fashion and design industry, their impact on design and production processes, and advancements in supply chain management and logistics. Nevertheless, opportunities for digital transformation and innovation will be examined.

In the report emerging business models will be analyzed. This involves innovative and disruptive approaches that are reshaping specific industries. These models often leverage new technologies, changing customer behaviour and market dynamics, and are important for understanding the F&D sector. The report will provide an overview of new business models in the industry and analyze the rise of e-commerce and online retail. In this report, Collaborative and circular business models will be explored as innovative approaches that promote sustainability, resource efficiency, and collaboration among stakeholders. direct-to-consumer models and their impact. As an emerging business model, direct-to-consumer gained significant popularity and this will be analyzed through a report.

To safeguard of creativity, innovation, and commercial interests of designers, brands have to be protected by intellectual property protection. Because of this crucial role that copyright and intellectual property management have, the report will deal with the challenges of codesign and co-development methodologies and best practices for managing copyright and intellectual property.

This report will serve as the basis for defining specifications and requirements to build up a reference map to develop the CODES tool.

2.3. *Scope and methodology*

The document “Sectoral overview and mapping of best practices” is carried out by each partner on the local state-of-the-art. The report consists of the selection of best practices concerning the most promising solutions and experiences regarding business models, innovative technologies, sustainable patterns, copyright, and intellectual property rights issues in changing environment. Partners also did online surveys on needs and opportunities.

The scope of the sectoral overview includes fashion wearables and the people working with them (fashion designers, graphic designers, illustrators, art directors, and textile designers...). Enter surveyed the Croatia level, Romagna tech on Emilia – Romagna Region, and KEPA on the territory of Central Macedonia (RCM). The methodology is based on a participatory approach through the direct involvement of operators and stakeholders that will be involved through implementation. The report contains local case studies or success stories to illustrate industry trends, innovative practices, or initiatives within the fashion and design sector. The best practices document highlights exemplary companies or brands that have embraced sustainability practices or adopted digital transformation.

Data was collected from different databases including market research study reports, academic publications, and online resources. Company websites, press releases, and publicly available reports were analyzed. The methodology included the identification of the key market trends, drivers, and challenges influencing the sector. Exploration of factors such as changing consumer preferences, technological advancements, sustainability, and global market dynamics was taken into consideration.

To get a better overview of sector partners examined the landscape, market structure, and role of the key players both in traditional and emerging markets. At the end of the sectoral overview partners provide a summary of key findings together with implications for the future of the fashion and design industry. The report is concluded with recommendations for the stakeholders in the industry.

3. Market Trends and Growth

3.1. Global market size and growth projections

“Fashion is one of the world’s most important industries, driving a significant part of the global economy. It is one of the key value-creating industries for the world economy. If it were ranked alongside individual countries’ GDP the global fashion industry would represent the seventh-largest economy in the world,” stated McKinsey in its State of Fashion 2017 report.

The largest retail markets in the world are China, the US, the United Kingdom, Germany, and Japan. China and the US also play a significant role in international trade. China is the largest exporter worldwide of clothing and the US is the second largest importer.

Before the Covid-19 pandemic, the fashion industry’s global revenue was estimated between \$1.7 trillion and \$2.5 trillion according to two different research reports by Euromonitor and McKinsey.

According to Euromonitor, the global apparel and footwear market size shrunk in 2020 by -18.1% (to \$1.45 trillion), while McKinsey states that the fashion and apparel industry suffered a 20% decline in revenues for the 2019-2020 fiscal year.

After lockdown restrictions were lifted in many parts of the world, consumers headed back to the stores. With that, the fashion industry returned to pre-pandemic levels. According to Euromonitor, the global apparel and footwear industry grew by 18.1% at current prices in 2020-2021, to 1.71 billion dollars in market size (retail value USD million) in 2021.

The world’s apparel retail market was expected to enjoy a 7.5% growth in 2021-2022 to 1.84 billion dollars in 2022 and a 6.1% growth in 2022-2023 to 1.95 billion dollars in 2023.

The United States and China account for most of the global apparel demand. You find the five markets with the highest market size in 2021 in USD million below.

China	427,153.9
USA	364,136.6
United Kingdom	70,734.8
Germany	69,957.3
Japan	65,764.0

Source: [Euromonitor International, a market research provider]
(<https://fashionunited.com/companies/euromonitor-international>)

Revenue generated from the women’s apparel market is much higher than that of men’s or children’s apparel. In 2018, womenswear made up more than half (53%) of global fashion retail spending. Spending on menswear accounted for 31% and childrenswear for 16%.

World merchandise exports of manufactured goods were affected by the Covid-19 pandemic in 2020: the annual percentage change was -5.2% in total. Clothing saw a -9.1% decline in 2020, while textiles saw a strong increase of +16%, due to the demand for protective personal equipment.

China is the largest exporter of textiles and clothing worldwide and the EU is the largest importer of these goods.

To cater to the large, 3,000 billion, textile and garment industry new companies are entering the market every day. Most of these companies remain rather unknown to the consumer audience, better known are the individual brands that are part of these global fashion companies.

Many industry players are in a stronger position than they were a year ago, however. The fashion industry delivered a 21 per cent increase in revenues in 2020–21, and EBITA margins doubled by 6 percentage points to 12.3 per cent. The fashion market, excluding the luxury sector, will struggle to deliver significant growth in 2023. McKinsey's analysis of fashion forecasts projects relatively slow sales growth of between –2 and +3 per cent, weighed down by a contraction in the European market (expected to shrink between 1 and 4 per cent) (exhibit). China and the United States are expected to fare better, growing between 2 and 7 per cent and between 1 and 6 per cent, respectively. These forecasts are reflective of inflation and are calculated in local currencies, meaning that the real impact for the sector could be more negative than these figures suggest.

Inflation is at the top of executives' minds for the coming year, according to results from the annual Business of Fashion and McKinsey State of Fashion Survey. They expect that inflation will undercut consumer demand, pushing shoppers to curtail fashion spending or trade down for less expensive products as their energy and grocery bills spike. Fashion companies are also anticipating that inflation will spike their costs, with 97 per cent of executives forecasting that their cost of goods sold, and SG&A expenses will rise within 2023. Cotton and cashmere prices, for example, have increased 45 per cent and 30 per cent year on year, respectively.

Fashion leaders are also watching global headlines closely in the year ahead, as macroeconomic and political uncertainties continue to obstruct business operations and escalate reputational risk. The war in Ukraine is of high concern to the industry, having already disrupted trade routes and triggered an energy crisis that will continue to have an impact. In China, further, COVID-19 outbreaks and the real estate crisis have undermined the region's growth trajectory, as well as disrupted supply chains. Meanwhile, extreme weather is negatively affecting supply chains and raw materials across Asia.

This global economic gloom is increasingly reflected in consumers' shopping habits, and the fashion industry is expecting that demand will be weakened or unpredictable in the year ahead. We foresee that the differences between the shopping habits of low- and high-income households will become more pronounced, as cost-conscious customers are likely to cut back or trade down. Meanwhile, shoppers for luxury items will likely continue to spend largely as they have been, insulated from the impact of the economic slowdown.

2022 presents a difficult outlook ahead, as fashion companies face challenges and revise forecasts downward after an exceptionally strong 2021, per McKinsey's analysis of global data in the fashion industry. Inflation and geopolitical concerns dominate the agenda for 2023, negatively affecting both consumer demand and brands' operating costs. Consumers are adjusting their behaviours, as many trade down to cheaper or discounted items to reduce their spending, though the luxury sector will remain strong, with affluent consumers less heavily affected by inflation.

Global apparel consumption: How many new clothes are bought each year?

Clothing consumption has grown explosively over the past 20 years. Fashion consumers buy over 80 billion new pieces of clothing every year. This is over 400% more than what we consumed just two decades ago.

In 2016, approximately 107 billion units of apparel and 14.5 billion pairs of shoes were purchased worldwide. That amounts to every single individual on the planet buying roughly 13 garments and 2 pairs of shoes every year. If that seems like a lot, then keep in mind that this number also includes millions of people in extreme poverty who struggle to make ends meet, let alone buy any new clothes. Then you start to realize that in reality a far smaller amount of people is buying much, much more.

In 2021, people consumed 16.7 units of apparel & footwear on average worldwide, spending 220,7 dollars on average.

Worldwide consumption Apparel & Footwear

	2019	2020	2021	2022 forecast	2023 forecast
Units per capita (retail volume)	17.2	15.4	16.7	17.2	17.6
Total spend per capita (retail value per capita in USD)	232.7	186.6	220.7	235.2	247.4

Source: [Euromonitor International, a market research provider]
(<https://fashionunited.com/companies/euromonitor-international>)

Country	Value spent per person	Items purchased per person	Average value per item
USA	\$844	53	\$16.04
UK	\$889	33	\$27.33
Brazil	\$117	11	\$10.49
Norway	\$1150	12	\$28.26
Egypt	\$27	2	\$12.63
India	\$34	5	\$7.01
China	\$198	30	\$6.73
Vietnam	\$24	2	\$9.81
Japan	\$547	26	\$20.99

In an article from Common Objective CO Data 'Volume and Consumption: How Much Does The World Buy?', May 2018. Based on data "Number of apparel units purchased per country, 2017 from Market Research Provider, Euromonitor International

Production

The clothing, textile and footwear industries together are incredibly labour-intensive.

Different sources name various numbers when estimating the number of people that work in the garment industry. According to the International Labour Organization, there are more than 60 million workers around the globe in the textiles, clothing, leather, and footwear industries. "Ellen MacArthur" Foundation states that globally, the clothing industry employs more than 300 million people along the value chain, which can be understood to also include people that work in the design, distribution and retail divisions of the fashion industry.

In Europe, there are 1.3 million people employed in the textile and clothing industry at 143,000 companies. 537,482 people work in textiles and 760,637 in clothing.

Euratex states that the sector is a fundamental pillar of the local economy in many EU regions. The number of people employed and the number of companies in the sector decreased slightly: -3.2% and -3.3% respectively (percentage change from 2019/2018). In 2019, the number of people employed in Europe's textile and clothing industry was estimated at 1.5 million in 160,000 companies. The majority (+70%) of fashion workers in the EU is women.

The global fashion industry produces more than 100 to 150 billion items of clothing per year. The number of garments produced annually has doubled since 2000 and exceeded 100 billion for the first time in 2014.

E-commerce

Online shopping has been growing for years. People buy more and more via the Internet. In 2020 e-commerce sales globally jumped to \$4.2 trillion and the global trend continued in 2021, causing online sales to culminate in an estimated 2.14 billion online shoppers worldwide, and \$4.9 trillion in revenue. Global e-commerce sales were expected to reach a total of \$5.5 trillion worldwide in 2022. It's forecasted that global online retail sales will exceed 7 trillion dollars by 2025. In 2021, e-commerce accounted for nearly 20 per cent of retail sales worldwide. Forecasted is that in 2022 that share would be 21%, and in 2025 the online segment will make up close to 25% of total global retail sales. Countries with the highest e-commerce revenue are China, the US, Japan, the UK and Germany.

In the realm of fashion e-commerce, the segment with the most users is undeniably 'Apparel.' It stood out as the primary preference among global consumers for online shopping in 2021, whether it was for local or cross-border purchases. Notably, the online apparel market witnessed significant growth during 2020, particularly due to the accelerated shift towards online shopping induced by the Covid-19 pandemic. This surge surpassed the growth rates observed in previous years.

Zooming out to the broader context, the Global Fashion E-Commerce Market as a whole reached a staggering value of 668.1 billion dollars in 2021, underlining its immense significance in the digital marketplace. Diving deeper into the specifics, the accessories segment of the global e-commerce fashion market accounted for an impressive revenue of approximately 261.5 billion dollars in the same year. Furthermore, the footwear market also held its own, generating around \$122 billion in revenue in 2021, illustrating the steady demand for online footwear purchases.

Overall, the fashion e-commerce landscape continues to thrive, with the 'Apparel' segment leading the way in terms of user engagement, while the entire market boasts substantial values and steady growth rates, even amidst the challenging circumstances posed by the Covid-19 pandemic.

Statista estimates that the online clothing and apparel industry will reach a value of 1.2 trillion U.S. dollars by 2025, "Research and Markets" expects the e-commerce fashion industry will grow to 1.1 trillion dollars in 2026. Of overall fashion retail sales worldwide, nearly 21 per cent are online purchases.

In the Fashion segment, the global online share of revenues already reached 23% in 2020, but the segment's growth will continue in the next years, driven by East and Southeast Asia regions with their growing middle class and lagging offline shopping infrastructure.

One of the leading trends is the direct integration of shopping functionality into the content display on social media, enabling high-speed, "inspire and sell" customer conversion (e.g., Instagram Checkout). The audience is increasingly shifting from desktop to mobile, and improving the mobile browsing and checkout experience is becoming crucial.

The eCommerce Fashion market is a sector of online retailing that focuses on selling clothing, shoes, and accessories through digital channels. The purpose of eCommerce Fashion is to provide consumers with a convenient and accessible way to browse and purchase fashion products from a wide range of brands, designers, and retailers.

The relevance of the eCommerce Fashion market lies in its ability to offer a personalized shopping experience, with features such as virtual try-on, style recommendations, and customer reviews. It also enables brands and retailers to expand their reach beyond physical stores, connecting with customers across different geographies and demographics.

The eCommerce Fashion market has experienced rapid growth in recent years, driven by factors such as the increasing use of mobile devices for online shopping, rising consumer expectations for fast and reliable delivery, and the growing importance of sustainability and ethical practices in the fashion industry.

eCommerce Fashion businesses include Amazon Fashion, which offers a wide range of affordable and trendy clothing options, and Zalando, which operates in multiple European markets and provides a seamless shopping experience across multiple devices.

Additionally, direct-to-consumer brands like Warby Parker and Everlane have disrupted the traditional fashion retail model by selling high-quality products at transparent prices through their eCommerce platforms.

The eCommerce market for Fashion consists of three different markets:

- ▣ The Accessories market comprises the sale of wearable, fashionable accessories that complement a person's outfit, such as watches and jewellery, scarves and shawls, caps and gloves, luxury leather goods, belts, eyewear, ties, and bow ties, as well as luggage and bags with open and closable containers made from any material used by private end consumers to transport items (e.g., suitcases, briefcases, handbags).
- ▣ The Apparel market contains the sale of clothing and fashion accessories through digital channels which includes products, such as dresses, shirts, pants, shoes, and accessories like handbags, jewellery, and hats.
- ▣ The Footwear market comprises the sale of various types of footwear through digital channels which includes footwear products, such as shoes, boots, sandals, and sneakers.

3.2. *Regional market trends and opportunities*

Europe

European households consume large amounts of textile products: total consumption in Europe in 2020 was 6.6 million tons of textile products. In 2020, Europeans bought an average of 15 kilos of textiles. Of the 15 kilos that are bought on average each year, 6.1 kilos come from clothing and 2.7 kilos from shoes (the other 6.1 kilos are household textiles). Every year, 5.8 million tons of textiles are thrown away, about 11.3 kg per person.

According to the EU Environment Agency, textiles are in fourth place when it comes to the negative impact on the environment and climate change if only considering European consumption. Food, housing, and transport are number one through three.

In 2020, textile consumption in Europe had the third largest impact on water and land use, and the fifth in terms of resource use and greenhouse gas emissions.

Households in the European Union spent approximately 220 billion euros on clothing in 2020 articles, a decrease of -18% compared to expenditure the year before.

The average European expenditure on clothing in 2020 was 490 euros. Most money was spent in Luxembourg (1130 euros), Austria (810 euros), the Netherlands (770 euros), Denmark (750 euros), Italy (710 euros), Germany (640 euros), Belgium (630 euros), Ireland (620 euros), Cyprus (620 euros), Finland (610 euros), Sweden (570 euros), and Portugal (500 euros).

In 2020, Europeans spent an average of 4.1% of total household expenditure on clothing and footwear, whereas, in 2019, they spent an average of 4.6% of their spending on clothing and footwear.

On average, the Europeans spent around 600 euros on clothing in 2019 (as they also did in 2018), 150 euros on footwear, and 70 euros on household textiles.

Germany is the fourth largest apparel and footwear market worldwide, following China, the United States, and the United Kingdom. The 2021 market size is 69.9 billion dollars.

Textile and clothing industry in Europe

There are 143,000 companies in the textile and clothing industry in Europe. Of these, 48,343 (33%) companies operate in the textile industry in the broadest sense of the word, and 94,591 (67%) are active in the clothing sector.

The sector mainly consists of small companies: 99.8% are micro and SME companies. 88.8% of textile & clothing companies are micro companies with up to 9 employees. Small and medium-sized enterprises, with 10-249 employees, account for 11%, and large enterprises with more than 250 employees account for about 0.2%. The largest producers in the fashion industry are in Italy, France, Germany, Spain, and Portugal. These countries together account for three-quarters of the production in the EU.

The European Jewelry Market

Europe has a long history when it comes to jewelry. Some of the oldest pieces discovered are attributed to Homo sapiens and Neanderthals and date back to tens of thousands of years ago.

The first adornment objects were made tens of thousands of years ago, from hunting relics and they included animal bones, teeth, and nails. Their purpose was to help community members showcase the fact that they were brave and responsible. In time, as civilization arose, they became status symbols for the wealthy and powerful. For instance, jewellery was important in ancient Roman society, and both men and women wore it. It was frequently used as a symbol of wealth and status, and it was also given as a gift and used as currency. The influence of Roman culture was evident in Ancient Greek jewelry, as ancient Grecians used jewelry to symbolize their respect for their gods and goddesses, their main purpose was to showcase their immense wealth, status, and taste since jewelry was expensive and hard to attain during that time.

Nowadays, jewelry plays several roles in European culture. It is perceived as a sign of financial potency, a differentiator of class, it is meant to enhance someone's physical appearance, stand up for certain causes and showcase their personalities and values. In 2021, the European jewelry market was assessed at \$32,443 million and it is expected to reach \$37,374 million in 2025, growing at a 2.23% CAGR, until 2026, according to Statista. Europe generates about 47% of China's sales, in the same category. Compared to the continent's population, in 2022, the revenue per capita was expected to reach \$40.9, with 73% of the sales being associated with non-luxury goods.

According to the Observatory of Economic Complexity, in 2019, Europe's top 3 jewelry exporters were Switzerland (\$10.9 billion), France (\$7.7 billion), and Italy (\$7.3 billion), while the top 3 importers were Switzerland (\$16.6 billion), United Kingdom (\$5.64 billion), and France (\$5.6 billion).

Although associated more with watches than jewelry, Switzerland is thriving in this area. The country benefits from a mix of high-end consumers, which are interested in branded gold products, with 60% of their acquisitions targeting luxury pieces, significantly higher than Europe's 27% average.

The industry's revenue for 2022 amounts to \$1,237 million, as Statista points out.

Swiss

Swiss shoppers have a preference for trusted producers, respected and highly-renowned companies. This is no surprise if we take into account that the country is home to some of the world's most famous, exquisite brands, which have gone global, such as Chopard and Piaget.

France

France was expected to sell jewelry worth \$3,889 million, in 2022, with more than half being represented by non-luxury pieces. Compared to other European countries, in 2023, France will have one of the highest per capita revenues in the European jewelry industry, of \$59.3. Even if France has been going through several

crises in the past years, from the Yellow Jackets to the pandemic, consumers have a consistent appetite for jewelry. This has been keeping sales balanced, despite the overall climate, where stores were closed and retailers had a difficult time reaching their shoppers. Of course, France is one of the best markets for jewelry and the home of some of the world's most aspirational brands, such as Cartier, Chanel.

Italy

Italy is known for its beautiful aesthetics, design, and manufacturing, so, the "Made in Italy" label is a guarantee of fine taste and quality. Some of the brands worldwide consumers appreciate are Bvlgari, Damiani, and Roberto Coin, which combine gold with precious stones, as diamonds.

Germany

Germany is recognized for the way it works gold and for some of the world's most appreciated manufacturers, which have excellent techniques and heritage. Names include Wempe, Wellendorff, and Bucherer.

United Kingdom

The UK is known for its Birmingham Jewelry Quarter which holds the largest concentration of jewelry businesses in Europe. There are over 700 independent manufacturers here, responsible for over 40% of the country's production. Some of the top brands in the UK are Element Jewelry and Signet Jewelers.

Still, apart from them, there are countries with lower turnovers, in terms of sales, but which have differentiated themselves by being the starting points for companies that have taken over the world. Such examples include:

Denmark

Here, the jewelry segment amounts to \$285 million, according to Statista. Denmark is known as the home of Pandora, the brand focused on silver jewelry and charms that are sold in over 100 countries, on six continents, and in more than 7,800 points of sale. Pandora finished 2021 with a revenue of 19 billion DKK.

Austria

Austria's jewelry market is assessed at \$420 million, in 2022. The country is recognized for the Swarovski brand, which is a family-run, independent company, with a turnover of over 2.7 billion, according to figures communicated in April 2020.

European jewelry disruptors are combining finesse with sustainability and inclusivity

Fine jewelry, made from precious metals and stones has long been a financial investment that performed well economically across the years. This is why Europe has constantly registered a request for pieces with gold, silver, platinum, diamonds, sapphires, etc. Older demographics are those interested in purchasing items from heritage brands, made through traditional methods, with carefully curated materials. They make acquisitions for important moments, which need to be remembered, such as weddings.

Still, nowadays, heritage pieces are losing their appeal on the continent, as shoppers from the younger generations, such as Gen Z-ers, are less connected to the monetary and sentimental values of fine jewelry brands. Instead, they are looking for pieces that have a cultural appeal and that connect to the buyers, their values, and causes.

The luxury (fashion) sector in the EU

The luxury fashion sector makes an important contribution to the economy of the EU, according to the European Commission on its website: "*European savoir-faire and craftsmanship have built a worldwide reputation.*" According to the executive body of the European Union, about 5 million people work in the value chain and more than 1 million in the high-end fashion industry.

Most fashion production within the EU takes place in Italy, southern European countries such as Spain, Greece, Portugal, and newer EU countries such as Poland, Romania, Bulgaria, and Hungary. The countries with the most companies in distribution and retail are Italy, France, Poland, and Germany.

The shoe industry in the European Union In 2018, 19,856 companies were active in the European footwear sector (EU28) and together they employed 260,309 people. In 2012, the total turnover in the shoe industry amounted to 25.24 billion euros.

EU shoe production is concentrated in three countries: Italy, Spain, and Portugal. Italy alone accounts for about 50% of production.

The largest fashion companies in the world by market value are Inditex, Nike, and LVMH.

These are the Top 10 Most Valuable Fashion Brands Worldwide, based on 2020 Brand Value in US dollars:

Nike (\$36.8 billion), Louis Vuitton (\$32.3 billion), Hermes (\$18.3 billion), Gucci (\$18.2 billion), Zalando (\$17.9 billion), Adidas (\$16.2 billion), Tiffany & Co (\$15.2 billion), Zara (\$13.5 billion), H&M (\$11.5 billion) and Cartier (\$10.7 billion).

Looking at these top 10 fashion brands, Europe is home to the world's largest retailers, such as the Inditex Group, the parent company of Zara, Zara Home, Pull & Bear, Massimo Dutti, Bershka, Stradivarius and Oysho in Spain, and the H&M Group, owner of H&M, COS, Monki, Weekday, & Other Stories, H&M Home, Arket and Afound, in Sweden. In addition, head offices of renowned brands and companies, such as Louis Vuitton (in Paris), Hermes (Paris), Gucci (Florence), Zalando (Berlin), and Adidas (Herzogenaurach, Germany) are also located in Europe.

Louis Vuitton in Top 10 of Europe's Most Valuable Brands Louis Vuitton is the only fashion company to be among the top ten most valuable and strongest European brands. Kering brand Gucci is at number 17 in the ranking and Chanel is in 24th place, in the Brand Finance Europe 500 2022 ranking, published in 2022.

The retail and apparel sectors account for 11% and 9.1% respectively of the top 500, with a total of 92 companies in the ranking. Hermes ranks 30th, and fast fashion giants Zara and H&M 32nd and 35th respectively. L'Oréal is the only cosmetics and personal care company in the top 50 at 42nd place.

Europe is also the 'world capital' of textile research, innovation, and higher education.

- ***Trade in Clothing: Europe is an important importer and (re-)exporter***

In 2020, the EU imported 69 billion euros worth of clothing from non-EU member states. EU exports of clothing to countries outside the EU amounted to EUR 30 billion in 2020.

- ***The EU textile and clothing market in a global context***

The EU plays an important role in the fashion industry worldwide, both as an importer and consumer, but also as a producer and exporter of finished and semi-finished products.

In 2020, the European Union was the second largest exporter of textiles and clothing worldwide (the leading position going to China). The EU is the largest importer of textiles and clothing worldwide.

- ***Turnover development in the textile and clothing sector: the pandemic has (negatively) affected the trade in clothing***

Sales in the sector fell between 2019 and 2020 due to the Covid-19 crisis. The textile sector recorded a 9.3% decrease in the textile sector for the whole of 2020 and a 17.7% decrease in the clothing sector, compared to 2019. In addition, in 2019 the turnover of the textile and clothing sector in the EU-27 was estimated at €162 billion (of which €88.8 billion in textiles and €72.8 million in clothing).

The turnover in 2021 in the textile and clothing industry is estimated at 147 billion euros, an 11% bump, compared to 2019/2018. Of the 2021 turnover, 81.6 billion euros were generated in the textile industry and 65.3 billion euros in the clothing sector.

After a dip due to the pandemic in 2020, the export of European textiles and clothing has increased again in 2021. Exports rose by 10.6% in 2021 compared to 2020. Imports of textiles and clothing, however, lagged by 7.5% due to a decrease in suppliers from the United Kingdom and China.

The change in imports and exports improved the trade deficit (difference between imports and exports). The trade deficit in 2021 amounted to 48 billion euros. A total of 58 billion euros worth of textiles and clothing was exported and 106 billion euros imported in 2021.

The increase in exports was mainly due to strong performances in the Swiss, Chinese, and US markets. The growth in these markets was partly offset by the decline in exports to the United Kingdom due to new Brexit rules, customs delays, and a shortage of truck drivers. Exports to the UK fell by 23% in 2021.

The decline in imports of textiles and clothing can partly be explained by the decline in imports from China and the United Kingdom. European countries imported 28% less from China in 2021 (about -€13 billion) and 48% less from the United Kingdom (about -€3 billion).

- **EU: Where do our clothes come from?**

Clothing imports to the EU in 2020: 69 billion euros

In 2020, EU member states imported almost 69 billion euros worth of clothing from outside the EU. Most clothing comes from China: 21 billion euros, about 30% of the total. China is followed by Bangladesh (12 billion euros, accounting for about 18%), Turkey (8 billion euros, about 12%), the United Kingdom (4 billion euros, 6%) India, and Vietnam (3 billion euros, 4%) and finally, Cambodia (2 billion euros).

Germany is the largest importer of clothing in the EU Germany imported the most clothing into the EU in 2020, about 17 billion euros and/or 25% of the total import. Germany is followed by Spain (10 billion euros, 15%) and France (almost 10 billion euros, 14%)

Italy is the largest exporter of clothing in the EU Italy exported €10 billion worth of clothing to non-EU member states in 2020, 33% of total extra-EU clothing exports by value. After Italy comes Germany (with 5 billion euros, 17%), Spain (with 4 billion euros, 14%), and France (almost 4 billion euros, 13%).

E-commerce in EU

Online shopping is popular in the EU. Total European e-commerce has grown to 718 billion euros in 2021, a 13% increase compared to 2020 when it was still 633 billion euros.

The EU-27 is the driving force behind European B2C e-commerce, according to E-commerce Europe. *“E-commerce turnover [in the EU] has increased by 16% in 2021. More than 90% of the population is an internet user, and the share of internet users who buy online is expected to reach 76% by 2022.”*

“E-commerce accounts for about 10 to 15% of total retail sales in the EU,” said Christian Verschueren, director-general of EuroCommerce, the European voice of retail and wholesale, in a 2021 report from E-commerce Europe, which represents the interests of e-commerce companies. *“Yet it affects a much larger part of the consumer journey (up to 50% or more), which today includes a mix of physical and online.”* According to Verschueren, *“70% of retailers, especially micro-enterprises, had no e-commerce offerings before the pandemic”*.

There are more than 800,000 online stores in Europe, according to research by Ecommerce News Europe in collaboration with Dataprovider. Nothing is specified for fashion.

In 2022, the three items with the most popular purchases were clothing (including shoes and accessories), deliveries from restaurants, fast food, and catering services, and cosmetics, beauty and wellness products.

42% of online shoppers bought or ordered clothes (including sportswear), shoes, and accessories in 2022, down from 43 % in 2021. The proportion of individuals having bought or ordered products from restaurants, fast-food or catering services was 19 % in 2022, stable compared with 2021. The proportion of individuals who bought or ordered cosmetics, beauty, and wellness products was 17 % in 2022, unchanged compared with 2021. Only 3 % of online buyers reported having made a transaction related to films or series such as DVDs, blu-rays, etc.

Online purchases of goods, EU, 2022
(% of individuals who used the internet in the previous 3 months)

CODE	LABEL	16-24 years	25-54 years	55-74 years	EU
I_BFLMG	Films or series as DVDs, Blu-ray etc.	4	4	2	3
I_BMUSG	Music as CDs, vinyls etc.	5	4	3	4
I_BBMC	Bicycles, mopeds, cars, or other vehicles or their spare parts	4	7	4	5
I_BCFPH	Cleaning products or personal hygiene products	7	12	6	9
I_BEEQU1	Consumer electronics or household appliances	8	13	7	10
I_BFDS	Food or beverages from stores or from meal-kits providers	9	14	6	11
I_BCG	Children toys or childcare items	3	17	6	12
I_BMED1	Medicine or dietary supplements such as vitamins (online renewal of prescriptions is not included)	7	15	11	13
I_BHARD1	Computers, tablets, mobile phones or accessories	16	16	8	13
I_BSPG	Sports goods (excluding sport clothing)	16	18	7	14
I_BBOOKNLG	Printed books, magazines or newspapers	14	15	11	14
I_BFURN1	Furniture, home accessories or gardening products	9	20	13	16
I_BCEW	Cosmetics, beauty or wellness products	16	20	10	17
I_BFOR	Deliveries from restaurants, fast-food chains, catering services	25	23	7	19
I_BCLOT1	Clothes (including sport clothing), shoes or accessories	51	49	26	42

Source: Eurostat (online data code: isoc_ec_ibgs)

eurostat

Table 3: Online purchases of goods, EU, 2022 (% of individuals who used the internet in the previous 3 months) -
Source: Eurostat (isoc_ec_ibgs)

The individuals of the age groups 16-24 years and 25-54 years filled in the demand for online clothing with the proportion of 51% and 49% respectively of online buyers in 2022. Although it is important to notice the difference in the size of these age groups, the proportion of individuals aged 25-54 years was only topped by the group aged 16-24 years in the purchase of the following items: clothes, deliveries from restaurants, and musical articles (CDs and vinyl, etc.). For all the remaining products presented in the above table, the proportion of individuals aged 25-54 years was the highest, except for the items related to computers, tablets, and films or series, where the percentage was the same as for the age group 16-24 years.

In 2022, 51% of e-shoppers bought or ordered goods and services from domestic sellers. The rates of online customers who bought or ordered from a seller from another EU country, from the rest of the world, or where the origin was unknown were 19 %, 12 %, and 9 % respectively in 2022. In 2022, individuals aged 25-34 years presented the highest rate of individuals (61 %) with purchases from national sellers. The individuals aged 35-44 years followed with 60 %, while those aged 55-74 years were lowest with a rate of 39 % of e-shoppers in 2022. As regards the distribution by gender, while their purchases from domestic sellers are comparable (51 % for women compared with 50 % for men), men were more inclined to order or to buy from sellers from other EU countries (20 % for men compared with 18 % for women) as well as from sellers from the rest of the world (12 % for men compared with 11 % for women).

Concerning sellers based in other EU countries, unsurprisingly, the highest rate of purchases was from individuals from another EU country (28 % of individuals), i.e., 9 pp over the rate of domestic buyers (19 %). 22 % of students bought or ordered from sellers based in other EU countries. 16 % of students bought from sellers from non-EU countries. Pensioners and individuals aged 55-74 years presented the lowest proportion of online buyers from sellers outside the EU with a rate of 6 % each.

Origin of the seller, EU, 2022

(% of individuals who used the internet in the last 3 months)

	National sellers	Sellers from other EU countries	Sellers of the rest of the world (non-EU countries)	Sellers from unknown countries	Sellers from other countries (EU or non-EU)	
EU	51	19	12	9		23
16-24 years old	50	22	15	12		28
25-34 years old	61	26	16	13		31
35-44 years old	60	24	14	11		28
45-54 years old	51	19	11	9		22
55-74 years old	39	11	6	6		14
Males	50	20	12	9		24
Females	51	18	11	10		23
No or low formal education	33	11	8	8		15
Medium formal education	49	17	10	9		20
High formal education	66	28	16	11		33
Nationals of another EU-Member State	45	28	12	10		32
Nationals of non-EU country	41	16	11	7		20
Nationals	52	19	12	10		23
Retired or not in the labour force (excluding students)	36	10	6	6		13
Employees, self-employed, family workers	57	22	13	10		26
Students	50	22	16	12		28
Unemployed	38	14	11	8		19

Source: Eurostat (online dataset:isoc_ec_ibos)

eurostat 

Table 4: Origin of the seller, EU, 2022 (% of individuals who used the internet in the previous 3 months) - Source:

Eurostat ([isoc_ec_ibos](#))

Through the pandemic, e-commerce has been a breath of fresh air for retailers, which were required to navigate the challenges of nonessential store closings and lockdowns. While these times were a catalyst of digitalization, jewelry brands realized that selling their products online brings a significantly wider range of benefits that they could leverage even when the pandemic would be over.

Indeed, e-commerce enables jewelry sellers to offer their consumers a more in-depth look at their offerings, compared to physical shops, allowing them to display all their products, without worrying about security or holding a high level of stock. By developing e-commerce platforms and expanding their capabilities, jewelry players penetrate a market with fewer limitations and more opportunities.

Sales Channels

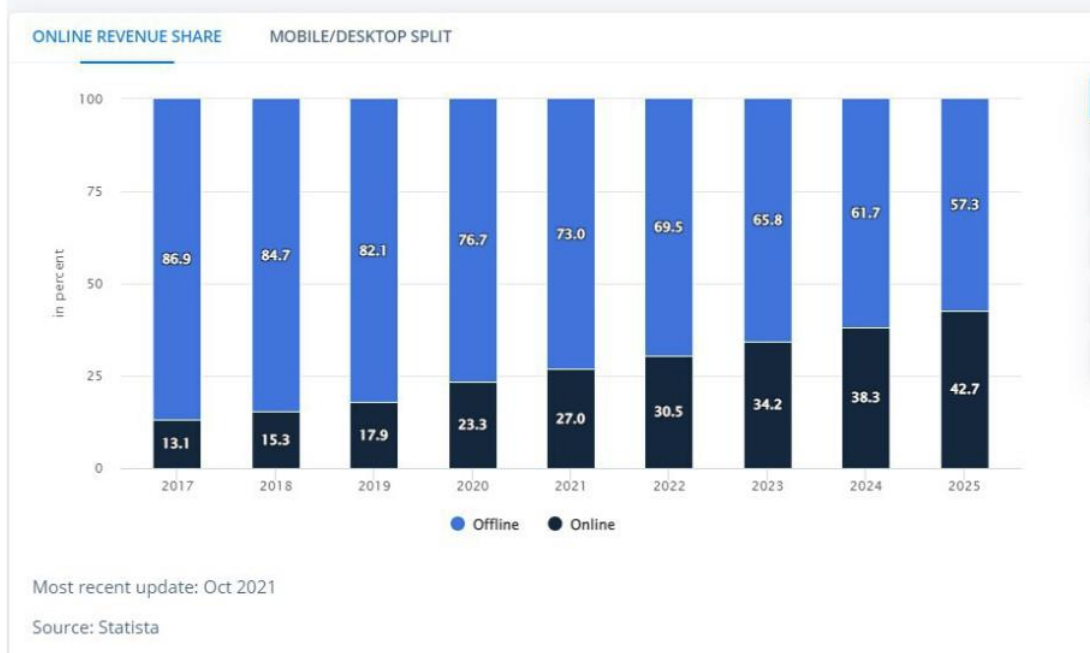


image credit : [Statista](#) , Evolution of the online revenue Share 2017-2025 on Jewelry market in Europe

In the following years, more and more jewelry companies will stop talking about online and offline environments and adopt a unified, omnichannel approach. This involves integrating e-commerce and stores in the same strategy, synchronizing messages and campaigns to ensure that consumers benefit from seamless experiences, across multiple channels.

In the omnichannel context, social commerce already plays an important part. Shoppable posts available to European brands through platforms like Instagram, enable jewelry companies to reduce the sales funnel, by allowing impulse shoppers to purchase products directly from their feeds.

One of the brands that are mastering Instagram social commerce is Tiffany & Co., which uses inspiring visuals to entice users and convert them into shoppers.

Social commerce goes hand in hand with user-generated content. Social media users enjoy getting inspiration from real people, with whom they may relate. This type of visuals increases brand trust and adds dimensions to a company's feed, because it disrupts their posting routine and diversifies their aesthetics, to make it more inclusive and diverse.

User-generated content (UGC) is particularly popular on Instagram. Dutch brand Myjewelery has a "Styled by you" section, where it showcases UGC received from shoppers and connects items to the e-commerce platform.

3.3. Consumer behaviour and changing preferences

Zoom in on fashion: we prefer to buy clothes online!

The percentage of textile and clothing sales generated by e-sales has more than doubled since 2009: in 2020 it was 11%, in 2009 it was only 5%.

The most popular category for online purchases is clothing (including sportswear), shoes and/or accessories. 68% of all online shoppers bought clothes, shoes, and accessories online in 2020. Number of clothing and

footwear (retail) stores in the European Union in 2019: 275,000 in clothing in the EU and 58,000 in footwear and leather goods.

Main criteria for buying clothes:

Price (68%) is the most important criterion for European consumers when choosing and buying clothes, followed by quality (61%) and fit (56%). After that, the most important criterion is product life (30%), fabric (24%), production location (16%) and brand (16%). The environmental impact of a product is only important for 15% of European consumers (*Source: Eurostat news 'Where do our clothes come from?', April 2021 & Statista Chart Where The EU Imports Its Clothes From 2021, April 2021*).

Where do we buy clothes from?

46% of Europeans buy from fast fashion retailers, 17% from thrift stores, 17% from ethical brands, 12% from resale apps, and 6% from luxury brands (*Source: Eurostat news 'Where do our clothes come from?', April 2021 & Statista Chart Where The EU Imports Its Clothes From 2021, April 2021*).

How rapid change is reshaping the tradition-soaked luxury sector in Europe and beyond:

Since Tik Tok discovered the "Succession" series, specifically the dynamic daughter of the Shiv Roy family, the term "**quiet luxury**" has taken off like wildfire, both among die-hard users of the "Tik Tok" platform and people having a slight interest in fashion and its trends.

In terms of numbers, this year, consumers in North America and European countries bought fewer products with a logo at rates of 43% and 16% respectively. Despite this, "logomania" continues to have great power in the fashion market, but this is mainly the case for luxury brands that have spent many years focusing on marketing their logos and that try to promote a certain lifestyle characterized by them. However, the managing director of "MyTheresa", Michael Kliger, commented on this saying that, now the purchasing behaviour of the public - who of course can spend this money - leads them to the shelves and hangers with brands that are less logo-oriented and much more in manufacturing and raw material.

So, big brands are trying to create more subtle options for customers who are tired of logos. The example of the Kering company is typical, which recently announced new plans for the Bottega Veneta brand, which, as is known, does not have obvious logos. Investments of this kind by such brands are expected to continue at a rapid pace. The founder of the "Beige Habilleur" house in Paris, Basile Khadiry, is a designer pursuing for years the so-called logo-free luxury, in other words, "silent" or otherwise "quiet" luxury. Quiet luxury is not a trend, it's a lifestyle, a way of life that to some degree anyone with purchasing power from a level up can follow.

Khadiry's partner, Borsarello, is also the artistic director of the "Fursac" brand, which, along with other brands of the same group, similarly express simplicity, through the lack of logos on clothing and accessories. The well-known group recently announced that its sales this year have already increased by 22%. This is a fairly significant percentage, indicative of the public's tendency to be stylistically oriented toward simplicity.

Attitude towards sustainability

According to the European Environmental Agency, the EU generated approximately 16.7 million tonnes of textiles waste in 2017, with only 25% being recycled or reused. Furthermore, it is estimated that the fashion industry contributes 5% to global greenhouse gas emissions, and the production of one cotton shirt requires 2,700 litres of water. These statistics highlight the urgent need for the fashion industry to transition towards sustainable practices.

In Europe, only 12% of consumers consider sustainability particularly important in the fashion sector. When asked which sectors sustainability ranks as most important to consumers, the fashion industry is not very high on the list anywhere in Europe coming only in eighth place with 12%. Consumers consider sustainability more important in the food industry, energy sector, transport, healthcare, travel industry, and technology, among others.

- *How important is sustainable clothing?*
- *What do you pay attention to when purchasing and what are the obstacles?*

In Europe, 42% of consumers consider it important to buy ethical and sustainable clothing. Only 10% consider buying ethical and sustainable clothing very important.

The most important eco-friendly elements when buying clothes are sustainable fabrics and materials (39%), less or no chemicals (36%), and cruelty-free (i.e., products or activities that do not harm or kill animals anywhere in the world) (36%).

The main barriers to buying ethical and eco-friendly clothing are price (34%), followed by “it is not clear which eco-friendly aspects are met” (30%), and “it is difficult to distinguish eco-friendly brands” (28%).

27% of European consumers have already reduced their clothing purchases for ethical reasons.

Europeans give the clothes they no longer wear to charity (69%), to those around them (34%) or sell them online (21%). 15% leave the items in the closet and 13% say they throw them away in the trash.

On a positive note, the demand for sustainable fashion is increasing, with consumers becoming more aware of the environmental and social impacts of their purchases. A survey by Fashion Revolution found that 75% of consumers would boycott a brand if they found out it was not paying workers a fair wage. Furthermore, 48% of consumers are willing to pay more for sustainable fashion products.

Consumer shifts:

Two-track spending

Consumers may be affected differently by the potential economic turbulence in 2023. Depending on factors such as disposable income level, some will postpone or curtail discretionary purchases; others will seek out bargains, increasing the demand for resale, rental, and off-price products. Fashion executives should adapt their business models to protect customer loyalty and avoid diluting their brands.

Fluid fashion

Gender-fluid fashion is gaining greater traction amid changing consumer attitudes toward gender identity and expression. For many brands and retailers, the blurring of the lines between men’s wear and women’s wear will require rethinking their product design, marketing, and in-store and digital shopping experiences.

Formal wear reinvented

Formal attire is taking on new definitions as shoppers rethink how they dress for work, weddings, and other occasions. While offices and events will likely become more casual, special occasions may be dominated by statement-making outfits that consumers rent or buy to stand out when they do decide to dress up.

3.4. Emerging Markets and Opportunities

Why luxury brands are teaming up to acquire stakes in their suppliers.

From Prada and Zegna to Chanel and Brunello Cucinelli, luxury brands are forming alliances to ensure access to raw materials and gain better oversight of the supply chain. Experts say the pros outweigh the cons.

Ensuring a consistent supply of fine-quality raw materials from Italy has been an arduous task over the past couple of years — even for some of fashion’s biggest players. Pandemic disruptions have been followed by inflation, which has squeezed suppliers and hit production. Now, in a rare move, luxury brands are combining forces to acquire suppliers to protect Italian craftsmanship from external forces.

Recently, Prada Group and Ermenegildo Zegna Group announced they will each acquire a 15 per cent stake in the Italian knitwear manufacturer Luigi Fedeli e Figlio. It is the second time the two companies have teamed up to secure a joint stake in a supplier: in 2021, they jointly acquired a majority stake in wool and

cashmere supplier Filati Biagioli Modesto. The aim is to preserve Made in Italy craftsmanship and know-how and ensure a consistent supply of high-quality materials regardless of economic conditions or global supply chain shocks.

Experts say these tie-ups bring myriad advantages, both for the brands and the suppliers. However, they warn against allowing a small pool of luxury brands to have a monopoly over the country's wool and cashmere supply chain.

An accelerating trend: vertical approach in the supply chain

For years, brands have been trying to navigate delays at all stages of the production process by bringing suppliers in-house. Zegna Group, for example, has a largely vertically integrated model — meaning it oversees its products from raw material selection to finishing. It has bolstered its Made in Italy portfolio through the acquisition of wool, cotton, cashmere, and leather manufacturer Tessitura Ubertino (2021); knitwear manufacturer Dondi (2019); luxury hat manufacturer Cappellificio Cervo (2018); and fourth-generation textile manufacturer Bonotto (2016), among others.

Like Zegna, Chanel has been verticalizing its supply chain, acquiring stakes in Italian luxury knitwear manufacturer Paima (2021); French clothing manufacturer Grandis (2019); and Italian leather goods manufacturer Renato Corti (2019), among others. The house has invested in 13 Métiers d'art and more than 30 manufacturing sites over the last 40 years. However, this is the first time Chanel has partnered with another luxury brand to acquire a stake in its supplier. Prada Group and Brunello Cucinelli have pursued similar strategies.

The trend has accelerated since the pandemic. “After Covid-19, some of these manufacturers did not recover and some of them are going under. These are opportunities, and targets, for other brands or competitors to buy them,” says Stella's Daguillard. He adds that suppliers are attempting to modernize and remain competitive, including through the use of AI and robotics, and scaling teams — all of which require investment.

More pros than cons

There are several upsides to **brands** using their combined firepower to **acquire significant stakes in their suppliers**. The deals will give each company a **cost advantage** and **greater control over their supply timelines and processes**. With the investment from Prada and Zegna, Luigi Fedeli e Figlio can increase its production capacity — which in turn will strengthen the brands' access to top-quality Italian wool and yarn.

Chanel echoes this, saying the acquisition of a stake in Cariaggi Lanificio will grant its access to a constant supply of top-quality materials, ultimately strengthening core categories such as knitwear. “*Our desire is generally to invest with partners that we know, with whom we already work and whose skills and know-how we wish to preserve,*” a representative for Chanel says. “*Their activities are complementary and allow us to strengthen the sectors of excellence, such as the knitwear sector, which are essential to the activity and creation of our collections.*”

The brand can also look at synergies between the suppliers in its portfolio, and whether there are new development opportunities. For example, two of the suppliers it has acquired in recent years, Vimar and Lesage, have worked together to **develop eco-responsible tweeds**.

Greater oversight of the supply chain is increasingly important for brands, who are under pressure to improve their **traceability to comply with a wave of sustainable fashion** legislation as well as meet changing consumer expectations. Prada says its strategy is to have control over all stages of the production process, allowing transparency. Similarly, Zegna Group says vertical integration is key to having more control over the production process, from raw material selection to the end product.

The increasing demand for **transparency** means production companies are diverting more money towards becoming more sustainable.

The risks are limited for major luxury brands as they have the cash and resources to offset any supply chain disruptions such as long lead times and premium prices. **Smaller designers, however, may be forced to look elsewhere** — to manufacturers with shorter lead times or sourcing regions where raw materials are cheaper and easier to secure (but often of lower quality).

Among the cons, smaller designers might say that the brands who invested in the manufacturing company could now influence whom the business works with and who takes priority in the production flow. But again, these brands are definitely thinking long-term.

- **Circular Fashion:** The circular fashion model aims to minimize waste and pollution by keeping materials in use for as long as possible. Entrepreneurs can take advantage of this opportunity by developing business models that incorporate circularity. For instance, companies like Worn Again Technologies and Renewcell are using technology to recycle textile waste and transform it into new fibres for the fashion industry.
- **Sustainable Materials:** Entrepreneurs can focus on developing new sustainable materials for the fashion industry. For instance, Pinatex is a company that has developed a leather-like material made from pineapple leaf fibres. This material is not only sustainable but also cruelty-free, making it an attractive alternative to traditional leather.
- **Green Logistics:** The fashion industry's supply chain is known to have a significant environmental impact, with transportation being a significant contributor. Entrepreneurs can develop green logistics solutions to reduce the carbon footprint of the fashion industry. For example, companies like MUD Jeans are using electric vehicles to deliver their products, reducing emissions, and contributing to sustainable fashion.
- **Ethical Fashion:** Ethical fashion focuses on promoting fair and safe working conditions for fashion workers. Entrepreneurs can take advantage of this opportunity by developing business models that prioritize ethical fashion. For example, companies like People Tree and Armed Angels are using fair trade and organic cotton to create sustainable and ethical fashion products.
- **Slow Fashion:** The slow fashion movement promotes a more sustainable approach to fashion by encouraging consumers to buy fewer, high-quality pieces and use them for longer. Entrepreneurs can develop business models that prioritize slow fashion by creating timeless designs that are made to last. For example, companies like Patagonia and Nudie Jeans are known for creating high-quality, durable clothing that is made to last.
- **Renting and Sharing Platforms:** Entrepreneurs can take advantage of the growing trend of renting and sharing clothing by developing platforms that facilitate these transactions. For example, companies like Rent the Runway and Tulerie are offering consumers the option to rent high-end designer clothing for a fraction of the cost of buying.
- **Upcycling:** Upcycling involves transforming old or unwanted clothing into new products, reducing waste, and promoting sustainability. Entrepreneurs can develop business models that incorporate upcycling, like companies such as Rapanui and TRMTAB, which are creating new clothing from old garments.
- **Transparency:** Consumers are increasingly demanding transparency from fashion brands, including information about the materials used, manufacturing processes, and the impact on the environment and society. Entrepreneurs can develop business models that prioritize transparency, like companies such as Everlane and Honest, which provide detailed information about their supply chain and production processes.
- **Sustainable Packaging:** Entrepreneurs can develop sustainable packaging solutions to reduce the environmental impact of the fashion industry. For example, companies like Paptic and Ecovative Design are using innovative materials like mushroom-based packaging and bioplastics to create sustainable packaging solutions for fashion products.
- **Sustainable Accessories:** Accessories such as shoes, bags, and jewelry can also have a significant impact on the environment and society. Entrepreneurs can focus on developing sustainable

accessories that prioritize social and environmental responsibility. For example, companies like Veja and Matt & Nat are creating sustainable and ethical shoes and bags that use recycled materials and prioritize fair working conditions.

Second-hand (used) clothing represents 10% of the world market:

According to “ThredUP” latest resale report, by 2024 10% of the global apparel market is expected to consist of second-hand clothing. In Europe, the used clothing market is estimated to be worth \$18 billion in 2022 (around €16.7 billion) and is projected to reach \$41 billion by 2032 (€38.1 billion), showing an annual increase of 8.4%, according to the estimates of the American company Boston Consulting Group.

In terms of sustainability, making use of a used garment extends the product's life cycle, providing additional environmental benefits – reducing the extraction of natural resources and delaying the generation of waste. According to a BBC report, extending the life of a garment by around 9 months longer will eliminate its environmental impact by 20% – 30% compared to buying new.

The Internet plays a decisive role in highlighting and promoting the trend of second-hand fashion, as both digital platforms and social media "premium" more and more the utilization of second-hand clothes.

It is no coincidence that fast fashion companies such as Zara and H&M have also entered the resale market “en masse”, having already launched related platforms that enable consumers to buy used clothes or resell their products. The trend for second-hand goods and the so-called luxury goods, which especially via the Internet are developing high rates of growth in resale.

The revenues of the second-hand luxury goods market (clothing, footwear, leather goods, watches, glasses, etc.) in Europe are estimated to have reached 1.5 billion dollars (1.4 billion euros) in 2021 and according to the estimates of Statista, the European used luxury goods market is set to double its revenue performance by 2024, while it is estimated that by 2027 it will show a dynamic of \$4.8 billion (€4.5 billion).

Digital Access to Consumers:

Direct-to-consumer reckoning

Although brands across price segments and categories have embraced digital direct-to-consumer channels, mounting digital marketing costs and e-commerce readjustments have put the viability of the model into question. To grow, brands will likely need to diversify their channel mix, including wholesale and third-party marketplaces, alongside direct-to-consumer models.

Digital marketing reloaded

Recent data rules are spurring a new chapter for digital marketing as customer targeting becomes less effective and more costly. Brands will need to embrace creative campaigns and new channels, such as retail media networks and the metaverse, to achieve greater ROI on marketing spend and to gather valuable first-party data that can be leveraged to deepen customer relationships.

The advancement of social media has meant a great deal for all sectors that are considered relevant not only in everyday living but to commercial transactions, too. To be more precise, for instance, as of August 2022, and March 2023, “Meta” no longer continues with their live streaming services on Facebook and Instagram, respectively. These announcements come as part of Meta’s decision to focus on Reels on the social media platforms, which are short-form video content, online users are consumed with on TikTok, as well as pumping their money into virtual reality and the Metaverse. The decline in customer engagement in long-form livestream shopping, post-pandemic, seems to be the main reason for the end of these services, as online users now prefer short, snappy, and to-the-point video content. Moreover, beginning of April 2024, shops without Checkout on Facebook or Instagram enabled, will no longer be accessible, i.e., shops that direct people to an e-commerce site to complete a purchase, rather than allowing people to make a purchase directly through Facebook or Instagram, or shops with Checkout with messaging.

But here's the important thing to note — most functions of these products still exist on the platforms. Merchants can still create Shops on Instagram; it's just the shortcut from the home screen that was removed. This is really all just a rejiggering to **make commerce more integrated into the regular content on Instagram**, which makes sense when you consider how most consumers use social media. Users don't go to Instagram and Facebook specifically to shop, which is why a designated shopping section didn't work. What they *do*, is discover things they might like to buy through the content and ads in their feed.

We are likely to see innovation in the digital marketing strategies of fashion brands in 2023, with a potential move away from paid social media ads, and a focus on using retail media networks and the metaverse to build a strong brand community. We are already seeing increasing use of NFTs in customer loyalty programs and this is likely to continue. Like last year, we are expecting NFTs to become even more commonplace in trademark specifications in 2023.

3D visualization and technologies in Jewellery:

The rise of omnichannel and digital commerce in the jewellery industry is synonymous with the increased usage of 3D visualization and match technologies.

Online images need to provide a high level of detail, to support the quality assessment process. These are not easily expressed through photography, as normal viewing does not cover it. 3D and 360-degree photography and zooming enable consumers to inspect pieces from all angles and focus on specific areas.

3D visualization also ensures that shoppers may view the full collection available, as well as custom-made pieces, without requiring brands to produce them or hold them in stock.

- **B2B marketplaces are helping brands foster relations with wholesalers:**

Companies worldwide are creating B2B marketplaces that help jewellery retailers connect with producers and ateliers, and European brands are taking advantage of this new opportunity.

For example, conglomerates like LVMH, Kering, and Richemont, as well as fine jewellery brands like Greek-born Ileana Makri, and London-based Polly Wales, are using New York City online platform Joop to make wholesale transactions with retailers like Harrods, Net-a-Porter, Liberty and Selfridges.

- **Customization is more than messages and initials!**

With its mix-and-match approach to jewellery, Pandora has opened the door for customization, a trend that is particularly powerful nowadays. More and more consumers desire that exclusive feeling of having something which has been created particularly for them and, even more, being part of the creation process.

If up until recently, this was complicated to attain, now, with technology evolving, things got significantly easier and more appealing, for both sellers and shoppers. Due to customization software, customization now spans beyond adding initials, words, or dates to jewellery.

Brands offer e-shoppers significant freedom, allowing them to design their pieces, and play with features, metals, and stones, until they are completely enchanted by the result. Once the order is placed, the manufacturer gets the order, as well as the design that goes into production.

- **Virtual try-on is here to stay!**

Virtual try-on started gaining popularity before the pandemic, but it became a valuable choice when stores started to develop COVID-19 procedures and reduce consumers' interactions with jewellery.

Metaverse trend in the fashion industry

The fashion industry has always been at the forefront of innovation, and the latest breakthrough is the Metaverse. This new technology is transforming the way fashion brands interact with their customers. This path to Web3 creates the Meta Fashion trend.

The term “metaverse” usually refers to a shared digital space allowing people to interact in a virtual environment. It has been gaining popularity in the last few years, with companies such as Microsoft, Meta, Nvidia, and even Google investing in the technology. The metaverse is now being integrated into the fashion industry. It allows fashion brands to offer unique, creative, and immersive experiences to their customers.

Clothing brands are using the metaverse to create diverse experiences for their customers. For example, they are using it to host virtual fashion shows. This allows customers to view the latest collections without needing to physically attend a show. An important event in the digital fashion world was the inaugural Metaverse Fashion Week which took place in Decentraland in March 2022.

Metaverse Fashion Week — the second annual — was an event in Decentraland where a bunch of fashion brands built virtual spaces to show off clothes, digital architecture, and fashion vibes. More than 60 brands participated in the event, including Balenciaga, Adidas, and Coach.

Brands are starting to experiment more with what is possible in virtual social spaces like Decentraland, and big companies like Meta, Epic Games, and Roblox are trying to make their so-called metaverses attractive for those brands, too. But Metaverse Fashion Week is just the latest example of a clunky digital space that seems to exist only for the companies that make it, not for the users that visit.

In addition to virtual fashion shows, fashion brands are also creating virtual stores. Those help customers browse and purchase products from their own homes. This eliminates the need for physical stores. And those can be costly and time-consuming to maintain. The Meta Fashion trend also involves creating virtual worlds, where fashion brands can create unique experiences for their customers. These worlds can be tailored to the brand’s aesthetic and can be used to showcase new products and collections. Customers can also explore these virtual worlds and interact with other customers. This leads to a profound connection with the brand.

As an example, the Gucci brand created a virtual platform within the Roblox virtual world that reflected the company’s identity for its followers. This platform included a virtual Gucci outlet where virtual Gucci purses could be purchased at prices lower than their actual market value. To create a sense of exclusivity, Gucci released a limited number of these virtual bags. It has caused their resale prices to rise significantly.

The Meta Fashion trend has also enabled clothing and luxury brands to create immersive campaigns. The latter allows customers to explore new products and collections in a virtual environment. This enables brands to create a more engaging experience for their customers and allows customers to interact with the brand uniquely and innovatively.

The Meta Fashion trend represents a significant breakthrough in the fashion industry. It is a way for brands to engage with shoppers in a fun and interactive way while providing excellent customer service and satisfaction. This helps to build a strong sense of loyalty among customers. Those can try out new products and earn rewards for their loyalty.

Brands are using the Meta Fashion trend to merge the physical and virtual realms and gamify the entire experience. The fashion industry is taking inspiration from the popularity of building and engaging communities through video games and other digital platforms. \$176 billion is spent on gaming each year by the three billion people worldwide who actively participate. One notable brand that has embraced this trend is Nike.

This sportswear brand proceeded with its metaverse ventures by joining forces with the gaming platform Fortnite to launch the Nike Air Jordans. Players could compete in mini-challenges to unlock the ability to customize the shoes they purchased in-game. This demonstrates how the Meta Fashion trend has helped

increase brand recognition and loyalty. And shoppers are more likely to remember the brand if they had a positive experience with it.



Source: metav.rs/blog/meta-fashion-brands-metaverse

The collaboration between Nike and Travis Scott generated a positive effect not exclusively on the rapper the Beaverton brand received a great benefit from the massive exposure generated across social and streaming platforms. The collaboration between Nike and Jordan with Travis Scott started in 2017 for the launch of the 35th anniversary of AF1. After that, they produced much revisitation of iconic models that were sold out on the same day of the release, a successful collaboration.

During the event, Travis Scott wore different pairs of Jordans. In terms of exposure the monetary value generated for Nike was outstanding. It has been calculated that the exposure value of the top 5 videos on Youtube related to the event was \$518K.

This is an approach mostly leveraged by the entertainment industry, but the attendance numbers are pretty impressive and well worth our attention: 2.3M people watched Travis Scott's concert on Fortnite, 33M people saw the Lil Nas X concert on Roblox, 500,000 watched the Bigger Love Virtual John Legend show. All attendance numbers are much higher than in real life.

But perhaps the most interesting opportunity in marketing and CX in the metaverse is what marketers like to call metaverse commerce. It is also called the direct-to-avatar (D2A) economy, where brands are starting to sell digital goods inside the metaverse.

It is not a brand-new phenomenon, seeing that for instance in-game commerce has been around for quite a while now and the in-game purchase market value is even projected to evolve to \$74.4 billion by 2025. But we have recently really seen a fast uptake of (corporate) brands like Clinique, Tencent, Anheuser-Busch, and Gucci in all types of metaverse environments.

A very visible part of this is of course the non-fungible token or NFT market, whereby virtual goods are turned into unique content and collectibles or where a smart contract is added into the mix. In the Metaverse, these non-fungible tokens enable virtual ownership of the asset. Visitors of the Gucci Garden virtual store can for instance purchase exclusive, limited-edition avatar items. It has for instance sold a digital bag on Roblox for \$4,000. Coca-Cola launched virtual wearable NFTs, including a wearable jacket in the Decentraland metaverse. Samsung, then, gave away rare avatar clothing — a racing jacket, helmet, and shoes — as NFTs.

But it is not just about these 'unique' NFTs. Brands are also selling 'regular' virtual products in the metaverse. Balenciaga has partnered with Fortnite to design virtual outfits, accessories, and weapons that players can

purchase for their avatars. The Gucci Virtual 25 – a digital pair of sneakers – can be bought for between \$9 and \$12 to be ‘worn’ in augmented reality or used in partnered apps like Roblox and VRChat. Nike bought a virtual shoe company that makes sneakers ‘for the Metaverse’ and even has a dedicated Director of Metaverse Engineering.

3.5. *Local overview*

Greece

Greek textile industry for many decades has been the engine of the country's economic development. After all, it was the first of the branches that grew after the creation of the modern Greek state with factories being set up as early as 1860 in Piraeus and Syros and followed all over the country.

After the Asia Minor Disaster of 1922, large new industries were founded, based on the rich experience and expertise of the refugees, but also their low labour costs. A new era of prosperity began after the end of the Occupation and the civil war, with the introduction of modern machines and the creation of production and processing units in many cities of Greece.

Later, in the 60s and 70s, with the further modernization of mechanical equipment, entire industrial zones were developed, both in the urban centres and rural areas - Patras, Volos, Drama, Naoussa, etc. - covering the internal market, having significant exports of yarns as well as ready-made garments. It is characteristic that the sector came to represent 45% of the country's total industrial exports and employs around 170,000 workers.

The two phases of the crisis

As decisive as the textile industry was for the entire national economy, it proved to be so vulnerable to the lack of central strategic planning, which in combination with incorrect political and economic decisions, but also with international developments, led to the gradual decimation. As early as the early 1990s, once powerful conglomerates began to lock up, to be followed by hundreds of medium and small-sized companies.

This phenomenon continued and intensified from 2000 onwards due to rapid changes in the international environment, with globalization, fierce competition from countries with cheap labour and operating costs and other factors. Thus, when the painful adventure of the financial crisis began in 2008, it found the sector heavily hit, constituting many companies the fatal blow.

The storm of auctions

In the years that followed, dozens of factories that had been locked up went under the hammer, with most of them remaining unclaimed and developing into "wrecks" - symbols of the country's deindustrialization.

Within this unfavourable setting, certain companies remained and remain standing, constituting the healthy core of this market, dealing daily with major problems, such as exorbitant energy costs and the absence of financing.

The wave of the crisis was so strong that vital components of the sector were sacrificed, such as the “Hellenic Textiles”, which buckled under the weight of non-performing loans, amounting to 92 million euros, with its real estate and equipment ending up in auctions...

The new hopes

In the background of all these wrecks there were and still are companies that withstood the successive crises, even the last one of the pandemic which brought new data. Thus, despite the upheavals and challenges, the textile industry remains today one of the most productive and extroverted, employing thousands of workers. In fact, 2021 is considered a year of recovery, as total textile exports reached 1.293 billion euros, increased by 42.1%, compared to 2020, while they continued at the same rate in the first quarter of 2022.

A typical example is the “Nafpaktos” Textile Industry. Starting in 1964 from a shirt cutting and sewing workshop, along the way it created its weaving mill, after the first spinning mill in 1996 it was listed on the Stock Exchange. Of course, it also faced the consequences of multiple crises but managed to control its borrowing, reduce operating costs, as well as invest in modern equipment to respond to the changing environment. During this period, the company is completing an investment project of 6 million euros, while continuing to produce certified cotton yarns exclusively from Greek cotton producers, exporting to many countries in Europe and the Mediterranean.

Factors in the sector estimate that, apart from the suffering, the pandemic has brought reversals that favour the Greek textile industry. And this as the jump in the prices of raw materials and transport costs displaced China for the time being, boosting production and demand within Europe.

In this context, Greece has significant comparative advantages, such as the production of high-quality cotton from non-genetically modified seeds, which, combined with its strategic geographical position and high level of know-how, create the conditions for a great opportunity.

Today, the largest percentage of textile enterprises are in Northern Greece and employ an average of 5 people. In the Region of Central Macedonia, approximately 1,000 clothing-textile enterprises (44% of the country) are active, employing 12,000 workers (48% of the country) and carrying out exports worth 1.1 billion euros (70% of the country).

Regarding exports, according to Hellenic Fashion Industry Association (SEPE), their total value in the first two months of this year was 412 million euros, compared to 309 million euros in the corresponding period of 2021. In addition, clothing exports showed an increase of 26.5%, textiles 35%, while cotton "ran" at a rate of +40%, due to the significant increase in its price.

Extroversion and the creation of a strong Greek brand are mainly the challenges of the Greek Textile Industry, whose heart still beats primarily in Northern Greece, by micro, small, and medium enterprises, while the obstacles facing include taxation, energy costs, and competing with big brands.

The Greek law and the delays

By the end of 2023, EU producers and importers are obliged to organize Alternative Management Systems for textile waste and for the entire quantity available on the market.

According to the president of the Union of Graduated Greek Engineers and responsible for the “Uptextile Project”, the legislation prohibits the destruction of textile products. Thus, products that are not suitable for sale e.g., due to defects or errors, need to be sent for recycling or recovery under the responsibility of producers, importers, and distributors.

However, even though Law 4819 was passed in 2021, even today the necessary and foreseen Joint Ministerial Decision has not been issued to implement its provisions on the textile industry and its waste. Thus, of the two years of adapting to the changes, which is a long period, one year was wasted without a decision being issued.

The textile industry of Greece is also awaiting the relevant decision, which is forcing the authorities to proceed with its publication, to prepare and comply. It sees in the responsibility of the producer an opportunity to draw up a national strategy for the sector that in the past was one of the pillars of the Greek economy.

"We are a country that produces about 90% of Europe's cotton and the rest is produced by Spain, but no one gives the importance it deserves to the sector" points out Euripides Dontas, vice-president of the Association of Greek Textile Manufacturers. He also adds that producers' responsibility for the industry's waste is an opportunity to bring the world back to quality clothing. However, this decision has also been delayed: *"We*

hope that in the next few months, it will come out. We should hurry to get the pilot program running as it will be mandatory from 2024 onwards."

Weavers estimate that this will be a helping hand against the so-called fast fashion. At the same time, the European Cotton Alliance has been created with the main purpose of creating, registering, and promoting a European Cotton Trademark (EU COTTON) that gives an identity to the product produced in the European Union. The mark will accompany bales of cotton produced within the European Union and its use will be extended to all stages of the value chain up to the final clothing products with the aim of better informing the consumer.

"This mark will also contribute to the issue of waste as it will ensure traceability at all stages of production," says Mr Dontas, who believes that the market will return to slightly more expensive but better quality and more durable clothing: "Precisely because there is a crisis, we consider that there will be a turn. The world will turn to higher-quality products. Besides, the fact that the dollar appreciated has made all imported products more expensive. In addition, we notice another change. Consumers are looking for something not only more durable but also greener, more sustainable."

"If we intelligently follow the European strategy to 2030, and the Greek law related to waste, we will be able to preserve the Greek textile industry, from which 250,000 - 300,000 jobs have been lost in the past 20 years. It needs a national strategy and support from the State. If this is done, thousands of jobs will be recovered"* emphasizes Mr Dontas, adding that the European textile industry, including the Greek one, follows European product specifications, as well as labour and environmental rules, in contrast to the production process in third countries.

In a hyperinflationary period, disposable income is being used up on food and necessities, making it "prohibitive" for some to spend on equally inflated clothing and footwear. Indicatively, it is stated that based on the latest data of the Hellenic Statistical Authority (ELSTAT), in May the clothing-footwear category recorded an increase of 11.8%.

Regarding second-hand clothing in Greece, although there are no exact figures for its development, it is indicative that the overall sales of second-hand items in retail are on the rise. At the same time, based on the data of the Hellenic Trade Report 2022, written by the Institute of Trade and Services of the Hellenic Confederation of Trade and Entrepreneurship (INEMY ESEE), between 2008 and 2021 the expenditure of domestic households on clothing dropped by 60% and for footwear by 56%. In the domestic market, the growing consumer trend in favour of second-hand clothes turns the spotlight - so far - on small businesses, and thrift stores, as stores that resell second-hand clothes are more commonly known, the number of which is expanding significantly especially in large urban centres.

What are the major challenges that Greek fashion designers and companies face?

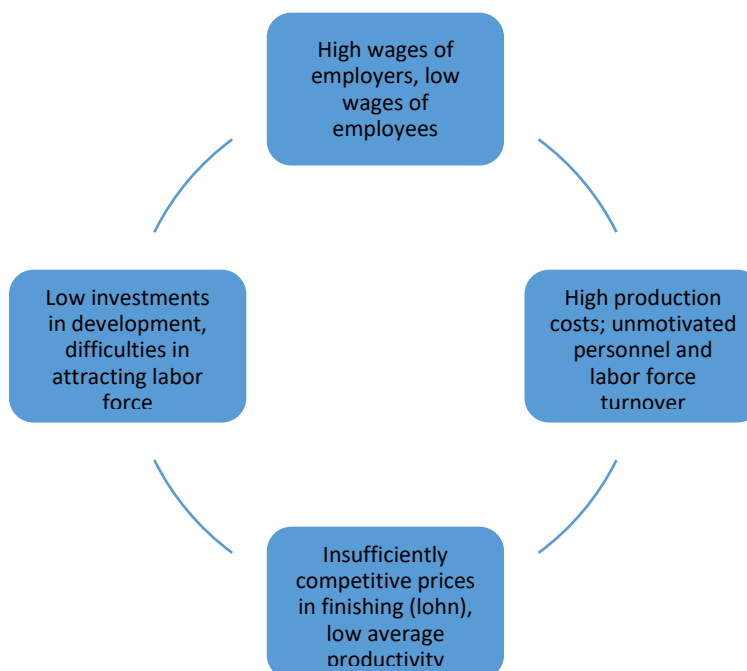
- Competition from international brands:
Greece faces competition from established international fashion brands that have a strong presence in the global market. These brands often have more extensive resources, marketing budgets, distribution networks, and the ability to offer competitive pricing.
- Counterfeiting & Counterfeit Products:
Counterfeit fashion products can be a threat to the reputation and sales of genuine Greek fashion brands. Efforts must be made to combat counterfeiting and protect intellectual property rights.
- Fast Fashion:
Fast fashion retailers offer cheap, trendy items, putting pressure on traditional fashion brands to adapt quickly, shorten production cycles, and address sustainability issues.

- Changing Consumer Behaviour:
Consumer tastes and preferences are constantly evolving and Greek fashion businesses must stay up to date and adapt to changing trends to remain relevant and attractive to their target audience.
- Economic Uncertainty:
Uncertain economic conditions can lead to reduced consumer confidence and reduced purchasing power, affecting overall demand for fashion products. Economic instability: Greece's economic challenges and potential fluctuations can affect consumer confidence, leading to reduced spending on clothing and fashion products.
- State, local government, and Tax Authorities are seen as “shareholders” by micro and small entrepreneurs.
- Low levels of Liquidity - Working capital
- High costs of production, energy, first & second materials
- Limited access to Financing and Funded Programs
- Greek market crisis, reduction in the number of retail stores, lack of suppliers
- New market channels (Super Markets - Internet) and international large retail chain stores (Zara)
- Lack of Human Resources – Production Staff
- Competition / Imports from third countries at very low prices
- Countertrade and Illegal Production Units (under contract, etc.)
- Illegal imports destroy Greek production.

Croatia

The Croatian textile and clothing industry is exposed to high competitiveness and a dynamic market to which it must adapt most profitably. Accordingly, the Croatian textile industry derives its recognition from tradition and a high-quality workforce as well as from high-quality foreign trade relations. Although Croatia has found foreign trade partners in stable textile industries such as Italy, China, Turkey, and Germany, many point out that the textile industry in Croatia is in the so-called vicious circle (Voloder, 2021).

Table: The effects of wage levels in the Croatian textile and clothing industry



Source: <https://repositorij.unios.hr/en/islandora/object/efos%3A4407/datastream/PDF/view>

The textile and leather industries have a long tradition in northwestern Croatia, and even today they form a significant part of the economic activity of this region. More than 80% of all jobs in the leather industry are located in the four counties of NW Croatia, most of them in Varaždinska. Textile and clothing production is somewhat more scattered, but equally important for the development of this part of the country. And while the textile industry once relied on factory giants such as Varteks, Čateks, MTC, and Regeneracija and on the production of its products, today's production structure has changed quite a bit.

As a result of the crisis that affected the entire European textile industry, most domestic companies ended up in bankruptcy and the „way out“ of the crisis was found in the closing of dislocated plants and direct production to the so-called lohn-jobs (where finished product parts are brought from the foreign factories, sewed or joined into a finished product in our factories and sent back to the foreign market). Numerous foreign companies, such as Calzedonia, Boxmark, HAIX, Wollsdorf, and others, opened production facilities in an industrial zone in the area of NW Croatia. These factories were either greenfield or brownfield investments. NW Croatia has many comparative advantages such as geographical proximity to the Western European market (effect reducing transport costs), and professional, experienced, and cheap labour force. A high percentage of the labour force is made up of women (Život U Tekstilnoj Industrij: Od “Radnog Logora” Do Nesigurne Starosti - RIS, n.d.).

According to the data of the National Bureau of Statistics (Statistics in series, Employees by activities) at the end of May 2021, 19,180 workers worked in textiles (textile production, clothing production, and leather and related products production). If this data is compared with the average of 2020, it turns out that in the first five months of 2021, the textile industry lost 5,344 workers. Every working day since the beginning of this year, an average of 57 textile workers have lost their jobs (Galić, 2021b).

Although awareness of ecology is growing in general, young people, mostly influenced by social networks and cheap online shopping, better fit into the concept of fast fashion. According to Guardian, young people buy more often and cheaper, while slow and expensive fashion is mostly reserved for the famous, and 64 per cent of teenagers have clothes at home that have never been worn. Vouge conducted a survey in 2020 which showed that 50 per cent of respondents buy clothes from fast fashion brands (Premužak, 2021).

However, the effects of the pandemic and supply problems could teach young people to shop less often. Supply constraints, slow product deliveries, and high transportation costs are slowing down the fast fashion industry. At the same time, well-known designers in Croatia are an example of slow fashion. The products are more expensive but of better quality and produced in small batches.

Apart from the obvious well-known domestic brands, there are more or less well-known designers who create slow fashion, and in a creative way. It is worth mentioning some, such as the brands Fasada, Candybalism, Seadro, Humana Nova, Booth by Marija Rooth, or the already well-known brand Miret.

The attitude toward second-hand and vintage clothes has changed a lot in the last few years. This is a growing trend, prejudices about this type of purchase are slowly disappearing. People are aware that in this way they spend less money, do something good for the environment, and they define their style beyond trends. Demand and number of buyers are constantly increasing, and this buying is also close to young people. The number of second-hand and vintage stores in Croatia is increasing, which is another proof that these clothes are more and more in demand, and large seasonal sales of used clothes from top fashion brands are also becoming more frequent. An example of that is the s BeThrifty event (a project of the Austrian online store) – the biggest sale of vintage clothes in Croatia. Tickets for this event are limited, clothes cannot be bought individually, but in kilogram, which amounts to EUR 30,53/kg.

The analysis of indicators of the development of the textile and clothing industry in Croatia shows that the industry textile lags behind the clothing industry in terms of production growth, price dynamics, and number of employees. The liberalization of the market led to a significant reduction in the number of companies in the industry Clothes. The companies should produce and focus the offer on products that require a short production cycle, smaller quantities, and increased innovation. The negative side of the textile and clothing industry in Croatia is not investing in the capital-intensive activities of the textile industry, as well as in research and development. A possible solution is intensive cooperation and integration of textile companies and other participants in various development and industrial centres and clusters both domestically and Europeanly the market. This could be achieved by establishing new support institutions that would promote the exchange of information, development initiatives, and contacts and thus ensured progress in this regard area.

Italy

The Origins of "Made in Italy"

The fashion industry is a vital part of the "Made in Italy" brand, encompassing various product sectors like clothing, textiles, footwear, jewellery, cosmetics, and more. Some aspects of Italian fashion trace back to the 1500s, showcasing the rich heritage and craftsmanship. One of the key figures in promoting Italian fashion globally was Giovanni Battista Giorgini, often called the "father of Made in Italy." In the 1950s, Giorgini organized influential fashion shows in Florence, featuring works by renowned Italian designers. These events garnered attention from international buyers and the press, establishing Italy as a major force in the fashion world and setting the stage for Italian fashion's global success. Giorgini's efforts were recognized by the Italian government, honouring him for his contribution to the industry.

Giorgini's journey in fashion started in the 1920s, showcasing Italian craftsmanship to American buyers. He observed the preferences of American buyers, who appreciated simple and affordable clothes for young working women. Undeterred by initial setbacks, Giorgini successfully organized the first Italian fashion show in New York in 1951, leading to a series of subsequent shows with support from Florentine institutions. These shows gained approval from American trade authorities and fostered the rise of mass-produced clothing and accessories. The international trade press played a crucial role in solidifying Italian haute couture's reputation on the global stage. The debut of a distinctive national fashion style can be traced back to Giorgini's foresight and determination in promoting Italian fashion worldwide.

The leading fashion industry companies in Italy

The Mediobanca Research Area presented on February 2023 a new report on the leading Italian Fashion Industry companies, which analyzes the financial data of the 152 fashion operators based in Italy with an individual turnover of over €100m. The report also includes a focus on the most recent and future sector trends, the production map and sustainability data, and a section on the industry's prospects based on the picture to emerge from engagement with seven CEOs (the full survey is available for download from www.areastudiomediobanca.com).

An overview of the leading Italian fashion industry companies

The value added by the 152 leading fashion companies based in Italy represented 1.3% of the country's GDP in 2021. The companies are spread throughout the Italian peninsula, with the highest concentration in northern Italy (111 companies), followed by the central regions (32). Of the various manufacturing segments, clothing accounts for 28.6% of the aggregate 2021 revenues, followed by leather, hides, and footwear (23.1%). Top-end products account for 73.2% of the total sales in the clothing, leatherwear, and textile segments. Non-Italian groups retain an important footprint in Italy: 58 of the 152 companies have non-Italian ownership, which controls 43.6% of the aggregate turnover (24.2% of which is French), confirming the popularity of "Made in Italy" products beyond the nation's borders. Non-Italian investors prefer the top end

of the range: 87.4% of the aggregate sales by the non-Italian-owned companies are generated by the luxury bracket (58.8% of which are French).

One of the most representative features of the fashion industry manufacturing companies is their international dimension: 73.7% of the total revenues are generated from exports, with jewellery leading the way (80.3%), followed by eyewear (78.0%), and leather, hides and footwear (76.9%). The top-end producers (in the clothing, leatherwear, and textiles segments) post higher export levels than those positioned in the cheaper bracket (73.2%, vs 58.2%), reflecting their enhanced resilience in terms of international markets coverage. The companies included in the survey have a production base that is predominantly Italian: 68% of the manufacturing facilities are located in Italy, and the other 32% elsewhere: 17% in Europe, 8% in Asia, 5% in Africa, and 2% in the Americas. The top-end companies again show a higher concentration of production in Italy: 83% of their production base is within national confines, with just 17% elsewhere (two-thirds of which in Europe). The fashion industry value chain also is strongly district-based, with the industrial districts accounting for 60% of total sales from manufacturing activities.

Strong recovery in 2021: revenues and investments back above pre-Covid levels

High quality continues to be profitable. In 2021 the 152 leading Italian fashion industry companies' total revenues reflect a V-shaped recovery compared to 2020, up 32.7% to €68.6bn, i.e., 0.9% higher than their pre-pandemic levels, employing a headcount of almost 260,000 employees (1.3% higher than in 2020, but 4.4% lower than in 2019). International sales bounced back (up 35.7%) even more strongly than domestic sales (up 28.7%).

The top-end producers reacted better than the mass market operators, posting sales of 1.1% above 2019 levels, while for the latter turnover was still 3.6% below pre-crisis levels. Italian-owned medium-sized enterprises posted a stronger recovery (up 6.6% vs 2019) than the large companies (down 1.7%) and the non-Italian-owned companies (up 3.3%), confirming that this size category is more dynamic and flexible and that MSEs are the pride and joy of the Italian industrial system.

The top twenty firms alone account for over half the aggregate turnover. The top-ranking company by revenues is again Prada (€3.4bn), ahead of Luxottica Group (€3.2bn), consolidated by the multinational EssilorLuxottica, and Calzedonia Holding (€2.5bn). The top three are followed by Moncler and Giorgio Armani, both of which posted a turnover of €2bn.

Profitability reflected a downward trend: the Ebit margin decreased from 12.1% in 2019 to 10.6% in 2021, coming on the back of the pandemic-related crisis, when profitability got no higher than 4.5%. The leather hides and footwear segment posted the best results in terms of margin, with 15.7% in 2021, followed by eyewear (12.3%). Clothing and jewellery were the only two production sectors to see margins improve in the three years covered by the survey, exceeding their pre-crisis levels. High-quality products continue to be profitable, posting an Ebit margin of 10.8% for FY 2021, some 46% higher than the margin posted by the mass market producers (7.4%).

Fendi was the top-ranking firm by profitability, with an Ebit margin of 32.8%, followed by Renato Corti (29.5%) and Gingi (29.2%, whose main brand is Elisabetta Franchi). Investments also recovered strongly, up 46.4% vs 2020, and 8.9% above pre-crisis levels (€330m higher than in 2019). Of the manufacturing companies, the jewellery segment posted the highest increase in investments (up 189.1%). On the balance-sheet side, the fashion industry companies have bolstered their financial structure, with borrowings representing 40.8% of their net equity in 2021 (versus 56.8% in 2019), with the eyewear, clothing and textiles manufacturers the most capitalized. Cash and liquid assets at the aggregate level represented 38.6% of borrowings in 2019 and 55.3% in 2021. For the fashion industry manufacturers, there was an increase in the number of companies in the investment grade bracket, which in relative terms rose from 79.9% in 2019 to 87.2% in 2021.

The fashion industry and the stock market

Much of the Italian fashion industry seems to eschew the stock market: only 17.5% of the aggregate turnover (€12.0bn) is produced by the eleven listed companies of which the panel is comprised, 1 while the other 82.5% (€56.6bn) is generated by the 141 unlisted companies.

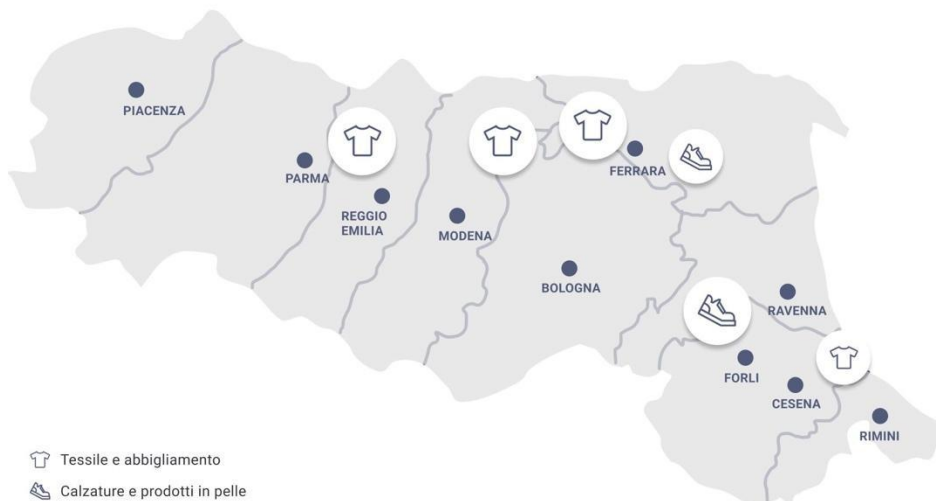
After the recovery reported at year-end 2021 (up 29.4% on 2020), the aggregate market capitalization at year-end 2022 posted a reduction (down 14.4% on 2021), totalling €37.6bn, equal to 5.3% of the Italian stock market's industrial value, excluding Prada.

The supply chain

As for the supply chain, analysis of the companies' sustainability reporting reveals that on average 56% of the largest fashion industry companies' suppliers are located in Italy, 30% in Asia, 11% in the rest of Europe, 2% in Africa, and the other 1% in the Americas.

Outsourcing to Italian suppliers is at its highest among the top-end companies (80%), which adopt a higher quality and proximity strategy, whereas the cheaper product manufacturers tend to use Asian suppliers (58%). Compared to 2018, the supply chain map currently looks to have shifted in favour of Italian suppliers, which have increased their weighting by two percentage points (from 54% to 56%) in the 2018-2021 period, at the expense primarily of Eastern European and Asian suppliers. Working with outsourcers therefore currently seems to favor Italian operators, by the trend to bring back productions previously outsourced to other countries to Italy. Two main strategies are currently visible: on the one hand, the drive towards building new production facilities in Italy, or to expanding existing ones, and on the other, a change in the allocation between different suppliers, with the arrangements with key suppliers located closest in geographical terms being strengthened, including through joint ventures or acquisitions.

The leading fashion industry companies in Emilia-Romagna



Emilia-Romagna, in Italy, houses a thriving fashion industry with distinct sub-supply chains in textile clothing, footwear, and accessories. The region boasts a cluster of small companies known for their exceptional technical and manual skills, alongside well-known brands like Max Mara, Liu Jo, Pinko, Twinset, Furla, Piquadro, and more. The province of Modena, especially Carpi, specializes in knitwear and apparel, hosting over 1,000 companies contributing significantly to the industry.

Romagna, specifically the San Mauro Pascoli area, is renowned for its footwear industry, featuring brands like Baldinini, Giuseppe Zanotti, Casadei, and Sergio Rossi. Additionally, the presence of Berluti's factory in Ferrara showcases the region's appeal to international luxury brands. Emilia-Romagna also serves as the birthplace of global fashion icons like Armani, MaxMara, and Pollini.

Several prominent fashion companies call Emilia-Romagna home, such as Fiorentini-Baker, Caruso, Berluti (originally from France), Liu-Jo, and Giuseppe Zanotti Design. These brands have earned recognition worldwide for their exquisite craftsmanship and high-quality products.

The region's fashion industry is strategically organized into production clusters, ensuring seamless collaboration between businesses covering various phases from manufacturing to services and commercial aspects. Key sectors include textile and clothing, footwear, and accessories.

Centres like Centergross in Bologna and Parma Couture contribute significantly to the industry's competitiveness and international reach. Furthermore, Emilia-Romagna has played a crucial role in the success of Yoox, the world leader in luxury fashion e-commerce.

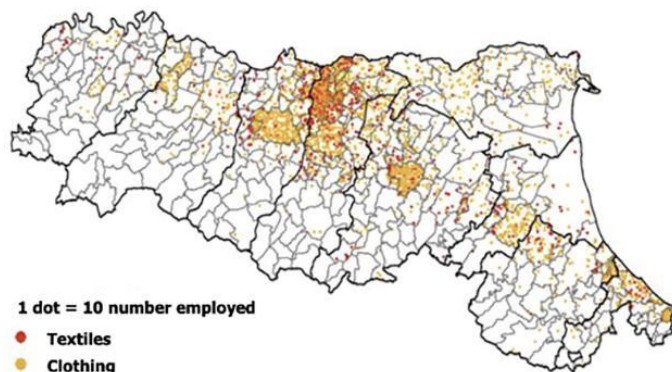
Overall, Emilia-Romagna remains a vibrant hub for Italian fashion, fostering a diverse and innovative ecosystem of companies and brands that continue to influence the global fashion landscape.

Fashion in the region

Source: Databank Istat-ASIA 2010

The maps below clearly show that the textile and clothing sector lists more businesses and hence more people employed in its sector than the others.

The fashion cluster – Textiles and clothing - Number employed



The fashion cluster – Footwear - Number employed



The fashion cluster – Fashion accessories - Number employed



Areas with higher concentrations of numbers employed

Textile and Clothing

- The **Carpi** district in the province of **Modena**, with small and medium sized companies
- **Bologna and Reggio Emilia**, large and medium sized companies
- Spread in smaller numbers over other provinces

Footwear

- The **Forlì-Cesena (San Mauro Pascoli, Savignano, Gatteo) and Rimini** area. Specialization in luxury level shoes
- **Ravenna** (Fusignano, Lugo di Romagna, Bagnacavallo)
- The **Emilia** area, particularly Bologna. Oriented towards traditionally made men's shoes

Fashion Accessories

- A high concentration in **Modena** (Carpi in particular) and **Bologna**
- Followed by Parma, Rimini and Reggio Emilia

Source: <https://www.ervet.it/wp-content/uploads/downloads/2015/05/Invest-in-fashion-in-Emilia-Romagna.pdf>

The New Fashion Trends in Italy

The research "New Fashion Trends in Italy: Made in Italy between Sustainability, Online Fashion and Renting Clothing" analyzes Italian consumer habits and fashion market trends in Italy, highlights the worldwide recognition of Made in Italy, studies the phenomenon of online shopping, the spread of the practice of "renting clothing," and finally the growing consumer awareness of the environment and sustainability.

Since the beginning of the pandemic, 45.5 per cent of Italians have limited their purchases of nonessential goods: in the North, this percentage is 39.6 per cent, in the Centre 42.1 per cent and in the South 56.8 per cent.

In the Italian context, the frequency of online purchases within the fashion sector has witnessed a noticeable increase over recent years. After electronics items, the "fashion and accessories" segment are the most popular for online purchases.

In the area of sustainable fashion, the most searched products on the web are sneakers (+142%) and denim (+108%), growing demand for reused jewellery (+90%) and ethical jewellery (+60%). Searches for eco-friendly textiles such as organic cotton and recycled plastic derivatives are on the rise (+35%) and those for leather and fur (-8%) are declining.

66% of Italian consumers would like fashion brands to take a stand on sensitive issues, and more than 58% believe it is important for them to do so on social media. The global business of "second-hand" products will increase between 15% and 20% through 2026.

40% of those under 24 buy used clothing, an industry valued at \$33 billion globally, with a strong increase in the rental fashion market (Rbs, 2022).

Consumers and Sustainability

Data show that Italians are increasingly interested in buying from brands that demonstrate their commitment to environmental protection by purchasing products that have a lower impact on the planet. According to the "2020 Report on Conscious Fashion" (Lyst platform in collaboration with the association Good On You), searches for vegan leather are continuously increasing (in one month they exceed 33 thousand), as well as searches for eco-friendly fabrics such as organic cotton and recycled plastic derivatives have increased respectively by 23% since November 2019 and 35% since January 2020. In contrast, searches for leather and fur are in continuous decline (-3.5% and -8%).

In a survey published in Statista9, 21% of respondents said they have cut back on clothing purchases based on ethical reasons, 16% of respondents said they would like to purchase "cruelty-free" and vegan garments but only 7% admitted they have already purchased according to these criteria. Obstacles to the purchase of sustainable clothing are the difficulty to discern the real eco-friendly brands, high prices and the difficulty to find these brands.

Online Shopping and New Trends

Online shopping is on the rise worldwide: the propensity to buy clothing online has reached a historic rate of 43%.

In the case of Italy, according to Idealo - one of Europe's leading shopping and price comparison platforms (2020) - 85% of Italian digital shoppers make at least one online purchase per month on average, 5 points higher than in 2020. In addition, the RetailX Consumer Observatory 2021 estimates that visiting e-commerce sites or shopping online is among the most popular activities performed by Italians online (81.5%), along with watching videos (93%), listening to music (61%), and playing games (81%).

The items most searched for online by Italians, in addition to electronics, are those belonging to the "Fashion and Accessories" sector (+44.9%). In 2021, according to a report by Federazione Moda Italia and World Capital, Italians have mainly bought knitwear (51.3%), coats and down jackets (39.3%), women's shoes and dresses (35.9%), pants (32.1%), jackets, suits (15.8%).

Today we observe structural changes in society, new trends and interests that require a new brand-consumer relationship. Terms such as “Digital fashion”, “Conscious” or “Genderless” will not only be among the most searched cultural sentiment on search engines and inside physical stores but real key concepts that will increasingly characterize the entire sector (Statista, n.d.).

4. Technological Advancements and Opportunities

4.1. Overview of technological trends in the fashion and design industry

The fashion and design industry has long been considered a dynamic and constantly evolving domain that seamlessly blends creativity and innovation. Its intrinsic nature to constantly adapt to emerging trends and consumer preferences has driven it to the forefront of global economic and cultural spheres. In recent years, the advent of technological advancements has catalysed a radical transformation, permeated various facets of this industry and triggering a paradigm shift in the way fashion and design are conceived, produced, marketed, and consumed.

As we move through the 21st century, a compelling narrative unfolds, underscoring the increasing indispensability of comprehensively examining and appreciating the profound impact of these technological trends on the fashion and design landscape. Technological innovations have helped in an era where creative vision is seamlessly interwoven with cutting-edge engineering, challenging traditional boundaries and fostering new realms of possibility. From design conception to manufacturing processes, retail experiences to consumer engagement, the infusion of technology has redefined the entire fashion and design ecosystem.

The rapid proliferation of digitalization and connectivity has revolutionized the industry's operational framework, leading to unprecedented opportunities for designers, manufacturers, and consumers alike.

However, alongside the transformative potential, these technological trends also give rise to ethical and societal implications that demand thoughtful consideration. Issues concerning intellectual property rights, data privacy, and environmental sustainability necessitate ongoing dialogue and responsible implementation of these advancements.

In light of these transformative technological trends, this body of work seeks to provide a comprehensive overview of the intricate interplay between fashion, design, and technology.

Artificial intelligence

Undoubtedly, nowadays Artificial Intelligence (AI) stands as the newest, most widely discussed and highly interesting technological trend in every aspect of life. With the help of AI, the fashion and design industry is presented with a multitude of technological opportunities that have the potential to revolutionize various aspects of the domain. As is evident from the various fields of application that have already adopted this technology, AI's integration into the industry opens up new avenues for innovation, efficiency, and personalized consumer experiences.

One significant technological opportunity that AI offers to the fashion and design industry is the ability to enhance the design process. AI-assisted apparel design, as explored in the research "AI Assisted Apparel Design", leverages machine learning algorithms to generate creative and innovative designs (Dubey et al. 2020). By analysing vast datasets of fashion trends, consumer preferences, and historical designs, AI can assist designers in conceptualizing unique and appealing creations. This not only expedites the design process but also offers fresh perspectives and inspirations, leading to novel design outcomes.

Moreover, AI's capabilities extend to personalized fashion recommendations, thereby enriching the shopping experience for consumers. The report "fAshlon after fashion: A Report of AI in Fashion" highlights the role of AI-driven fashion recommendation systems. These systems use the technology of AI to analyze individual consumers' preferences, purchase history, and browsing behaviour to offer tailored suggestions (Zou and Wong, 2021). By providing personalized product recommendations in this way, the fashion and design industry can enhance customer satisfaction and foster brand loyalty.

Furthermore, AI can significantly impact the production process in the fashion and design sector. The implementation of AI-driven automation and robotics streamlines manufacturing processes, leading to increased efficiency and reduced production costs. Automated systems can handle repetitive tasks, such as cutting, stitching, and quality control, thereby freeing up human resources to focus on more creative and strategic aspects of the industry.

Another noteworthy technological opportunity that AI presents to the fashion and design industry is data analytics. AI algorithms can process vast amounts of data related to consumer behaviour, market trends, and supply chain management. This data-driven approach enables businesses to make data-informed decisions, forecast trends, and optimize inventory management, resulting in improved operational efficiency and profitability.

Finally, AI has the potential to enhance the virtual try-on experience for customers. By using AI-powered virtual fitting rooms, consumers can visualize how different garments will look on them without physically trying them on. This immersive and interactive experience not only boosts consumer confidence in their purchase decisions but also reduces return rates, benefiting both consumers and businesses.

As an actual result of what was written, Artificial Intelligence (AI) has already found several practical applications in various real-world business scenarios within the fashion and design industry. Some examples are:

- Stitch Fix: Stitch Fix, an online personal styling service, utilizes AI algorithms to curate personalized fashion recommendations for its customers. By collecting data on individual style preferences, body measurements, and feedback, Stitch Fix employs machine learning to continuously refine its recommendations, improving customer satisfaction and driving repeat business.
- The North Face: The North Face, a renowned outdoor clothing brand, implemented an AI-powered chatbot named "Lee" on its website and Facebook Messenger. Lee engages with customers, asks questions about their needs and preferences, and uses natural language processing to suggest suitable products. This AI-driven virtual assistant enhances customer engagement, provides personalized recommendations, and assists in the decision-making process.
- H&M and Uniqlo: Fast-fashion giants H&M and Uniqlo have incorporated AI into their inventory management systems. By analysing sales data, social media trends, and weather forecasts, these companies leverage AI algorithms to predict demand accurately. This enables them to optimize inventory levels, minimize stockouts and excess inventory, and ultimately improve operational efficiency and profitability.
- Nike: Nike has embraced AI in its product design and manufacturing processes. By utilizing generative design algorithms, Nike designers can explore countless design iterations and variations, optimizing performance, comfort, and aesthetics. Additionally, Nike employs computer vision and machine learning to enhance quality control during the manufacturing phase, ensuring consistency and minimizing defects.
- Amazon: As a leading e-commerce platform, Amazon leverages AI extensively in the fashion and design sector. The company employs AI algorithms to analyze vast amounts of customer data, including browsing patterns, purchase history, and customer reviews. This data-driven approach enables Amazon to offer personalized product recommendations, create targeted marketing campaigns, and optimize its supply chain operations.

These real-world examples illustrate how AI has permeated various aspects of the fashion and design industry, benefiting businesses by enhancing customer experiences, optimizing operations, and driving innovation. By leveraging AI technologies, companies can gain competitive advantages, improve efficiency, and cater to the ever-changing demands of consumers in the dynamic fashion landscape.

Virtual and augmented reality

With the use of Virtual Reality (VR) and Augmented Reality (AR), the fashion and design industry is presented with a wide array of technological opportunities that have the potential to transform various aspects of the domain, ranging from consumer experiences to design processes and brand engagement.

One key opportunity lies in enhancing the shopping experience of consumers across multiple fashion-related industry channels. Augmented Reality technology, in particular, holds great potential in this regard. By implementing AR applications for retail fashion shopping, consumers can experience an interactive and immersive shopping journey. AR allows virtual try-on of garments, enabling customers to visualize how different clothing items will look on them before making a purchase (El-Seound and Taj. Eddin, 2019). This not only enhances consumer confidence in their choices but also reduces the likelihood of returns and fosters a deeper connection between consumers and brands.

Additionally, the combination of VR and AR can further supplement each other in the retail space, creating promising innovation strategies. While AR is more practical for the purchase journey and workflow management, VR excels in creating strong emotional engagement and acts as a useful tool for branding and training. Virtual Reality can be utilized to create immersive virtual showrooms, where customers can explore collections and experience a brand's ethos in a captivating manner. Moreover, VR can be employed for employee training, allowing designers and store staff to better understand brand identity and deliver personalized customer experiences (Boletsis and Karahasanovic, 2020).

Furthermore, the integration of VR and AR technologies opens up new possibilities for the fashion design process. Designers can utilize VR tools to visualize their creations in a 3D virtual environment, enabling them to make real-time modifications and refine designs more efficiently. This not only expedites the design cycle but also enhances collaboration between designers, manufacturers, and stakeholders, leading to a more streamlined and iterative design process.

Moreover, the fashion and design industry can leverage AR and VR technologies for immersive and interactive fashion presentations. Brands can conduct virtual fashion shows, reaching a global audience without the limitations of physical events. Virtual reality can transport viewers to various settings and scenarios, offering a unique and captivating experience that elevates the brand's image and storytelling.

Finally, AR and VR present opportunities for enhancing consumer engagement in the metaverse. As the virtual world becomes more integrated with our reality, fashion brands can explore the use of virtual influencers, virtual showrooms, and digital clothing in the metaverse to engage consumers in novel and innovative ways (Boletsis and Karahasanovic, 2020).

In conclusion, the integration of VR and AR technologies in the fashion and design industry presents a multitude of technological opportunities. From enhancing the shopping experience through AR-powered virtual try-ons to utilizing VR for immersive fashion presentations and training, these technologies open new dimensions for creativity, interactivity, and brand engagement. Embracing these innovations can position fashion brands at the forefront of the industry, catering to evolving consumer demands and future-proofing their businesses.

Internet of Things (IoT)

The introduction of the Internet of Things (IoT) is opening up innovative ways to enhance consumer experiences, streamline supply chains, and revolutionize the design and production processes.

One significant technological opportunity lies in the realm of smart clothing and garments. With the seamless integration of textiles and electronics, smart fabrics can be created, enabling the integration of sensors into garments. These sensors can collect various biometric data, such as temperature, heart rate, and movement, among others. This real-time sensor data offers accurate and reliable information, and, as Akram et al. say in

their writing, it presents a new era in retail experiences for consumers. Smart clothing equipped with IoT technologies allows consumers to monitor their health conditions and physical activities, thus promoting a healthier lifestyle and personalized healthcare services. For instance, patients with chronic diseases can wear smart clothes to acquire non-invasive physiological data, which is then logged into the cloud server to analyze their health conditions and provide individualized healthcare services based on the data (Akram et al., 2022).

Moreover, IoT technologies can significantly impact the fashion industry's supply chain management. Real-time monitoring and tracking of the supply chain can be achieved through IoT-enabled traceability systems. This empowers stakeholders to visualize and optimize the entire supply chain process, from raw material sourcing to the final product's delivery. By integrating sensors and tags into textile goods, information about the product's journey can be logged on the cloud server and made accessible to various stakeholders, including manufacturers, retailers, and consumers. This enhances transparency, efficiency, and accountability within the supply chain, leading to improved inventory management and reduced waste (Akram et al., 2022).

Additionally, IoT technologies can aid in material selection and design processes. Smart clothing requires flexible, comfortable, and durable materials that can accommodate sensors and electrodes while maintaining comfort for the wearer. Advances in nanowire growth and device fabrication have led to the development of novel materials that can act as sensors and feel like human skin, paving the way for innovative biosensors. By integrating IoT-enabled sensors and electronics into the design of garments, designers can create interactive and functional clothing that goes beyond aesthetics and adds value to the consumer experience (Akram et al., 2022).

Furthermore, IoT technologies offer various wireless communication protocols, such as Bluetooth, NFC, RFID, and Low Power Wide Area Networks (LPWAN), which can facilitate seamless data transmission from smart clothing to cloud servers. These protocols enable real-time data sharing and analysis, supporting enhanced visibility, supply chain monitoring, and data-driven decision-making. IoT-enabled traceability technologies, such as barcodes, QR codes, and RFID, enable efficient tracking of products throughout the supply chain, ensuring better inventory management and reducing the risk of counterfeits (Akram et al., 2022).

In conclusion, the introduction of IoT technologies presents numerous technological opportunities for the fashion and design industry. As the IoT continues to evolve, its integration into the fashion and design sector holds the promise of driving innovation, enhancing customer experiences, and reshaping the future of the industry.

New materials

New materials are revolutionizing the way products are conceived, produced, and experienced. The integration of interactive, connected, smart (ICS) materials, as well as sustainable and eco-friendly materials, has paved the way for innovative advancements in the field of fashion and design.

The emergence of ICS materials, which stands for Interactive, Connected, and Smart materials, represents a significant technological opportunity for the fashion industry. These materials are characterized by their ability to be connected to digital interfaces, respond to stimuli, and even change their properties over time. They open up new possibilities for creating dynamic and interactive fashion products that engage consumers in novel and immersive ways. The qualities of ICS materials, such as their experiential patterns, expressive sensorial dimensions, and aesthetics of interaction, have the potential to reshape the design landscape, enabling designers to craft clothing that goes beyond traditional static forms. Furthermore, the programmability of ICS materials by both designers and users offers a new dimension of customization and personalization in fashion products, catering to individual preferences and needs (Parisi et al., 2018).

Additionally, the focus on sustainable fashion design and eco-friendly materials presents a significant technological opportunity for the industry. The integration of green natural fibres, regenerated fibres, and

other eco-friendly materials not only addresses environmental concerns but also aligns with the growing consumer demand for sustainable and socially responsible products. These materials possess positive externalities for society, as they do not contribute to environmental pollution during the production process. The use of eco-friendly materials promotes a more environmentally conscious and socially beneficial approach to fashion design, ensuring that clothing is not only non-toxic to the human body but also friendly to the environment. Moreover, the emergence of new synthetic high-tech materials that complement traditional green fibres in function enhances clothing comfort and breathability, elevating the overall wearing experience for consumers (Kumar, 2017).

Furthermore, the incorporation of technology into sustainable fashion design provides opportunities for innovation in material development and garment construction. Technological advancements, such as 3D printing and digital fabrication, enable the creation of intricate and customizable fashion pieces. This intersection of technology and sustainable fashion not only drives design creativity but also enhances production efficiency and reduces waste in the industry.

By leveraging these advancements, businesses can create products that are both technologically advanced and ecologically conscious, driving positive change in the industry.

3D printing

3D printing, also known as additive manufacturing, enables the creation of complex and customized objects with unprecedented speed and precision. This innovative technology has found applications in various business operations, from prototyping and production to customization and sustainability.

The application of 3D printing technology in the textile and fashion industry spans various aspects of the production process, including the fabrication of polymer-fibre composites. This technology has been widely adopted for making prototypes across diverse manufacturing industries, such as automotive, healthcare, aerospace, sports, and apparel. However, when it comes to everyday clothing manufacturing, the adoption of 3D printing technology is still at a niche stage (Chakraborty and Biswas, 2020).

One significant advantage of 3D printing in the fashion industry lies in its potential to create intricate and complex designs, allowing fashion designers to explore innovative and personalized concepts. It offers a high level of customization, enabling the production of tailored garments that cater to individual preferences and body shapes. Additionally, 3D printing can help reduce material wastage and promote sustainability by using only the required number of materials for each design. This aligns with the growing demand for eco-friendly and socially responsible fashion products.

Moreover, the implementation of advanced technologies, including 3D modelling software, simulation, and additive manufacturing, in the fashion industry is part of the broader concept of Industry 4.0. Industry 4.0 refers to the integration of digitalization, automation, and data exchange in manufacturing processes, leading to enhanced efficiency and productivity. By adopting 3D printing and related technologies, fashion companies can streamline their design-to-production workflow, resulting in reduced lead times and faster time-to-market for new fashion products (Spahiu et al., 2021).

Additionally, 3D printing allows for the creation of complex and intricate fashion products, such as garments, jewellery, and accessories, with a level of precision and detail that was previously challenging to achieve using traditional manufacturing methods. This technology enables fashion designers to visualize and evaluate their creations at the early stages of product development, facilitating iterative design processes and reducing the need for physical prototypes.

The applications of 3D printing in business operations are diverse and impactful and for this reason, companies can drive innovation, enhance customer experiences, and contribute to a more sustainable and efficient fashion ecosystem by using it.

4.2. *Impact of technology on design and production processes*

In recent years, technology has undergone rapid advancements, and its transformative effects are impacting the fashion and design industries in multiple ways.

One significant area where technology has made a considerable effect is supply chain management. The implementation of Radio Frequency Identification (RFID) technology has significantly enhanced the efficiency and visibility of supply chains in the fashion industry. RFID enables seamless tracking and monitoring of products, providing real-time visibility from raw materials to finished garments. Researchers, textile technologists, fashion designers, manufacturers, and retailers have been exploring the integration of RFID technology into their respective fields. Moon and Ngai (2008) conducted a study that presented a business value-added framework for the adoption of RFID in fashion retailing. Their findings highlighted the benefits of RFID, including enhanced supply chain efficiency, reduced stockouts, and minimized counterfeit products. By leveraging RFID, fashion companies can optimize logistics, improve order fulfilment, and enhance overall supply chain transparency, leading to enhanced operational efficiency and cost-effectiveness. With RFID technology, businesses can efficiently track inventory, detect product anomalies, and streamline the flow of goods through the supply chain, resulting in a more responsive and agile fashion industry.

Another domain where technology has transformed the fashion and design industries is the product designing phase. Advancements in technology have provided fashion designers with innovative tools and techniques to enhance their creativity and efficiency. For instance, 3D modelling software and simulation have become indispensable in the product designing process. Through 3D modelling and simulation, fashion designers can visualize and evaluate their designs more effectively, leading to a reduction in the number of physical prototypes required.

Moreover, technologies like 3D printing enable the creation of complex and customizable designs, catering to individual preferences and body shapes. This not only empowers fashion designers but also enhances the overall customer experience through personalized and well-fitted garments. As a result, the integration of 3D modelling, simulation, and printing in the product design phase has accelerated the design process, reduced time-to-market, and enabled the creation of innovative and customer-centric fashion products.

The impact of technology extends to the production processes in the fashion and design industries, ushering in the era of Industry 4.0. This industrial revolution, characterized by digitalization and advanced manufacturing technologies, has disrupted traditional production methods. Companies are now leveraging technologies like additive manufacturing, automation, and data analytics to streamline their production processes and optimize efficiency. Spahiu et al. (2021) presented case studies showcasing the implementation of Industry 4.0 technologies for various fashion products, including garments, jewellery, and accessories. By embracing Industry 4.0 technologies, fashion companies can achieve greater operational flexibility, reduce production lead times, and respond quickly to changing customer demands. These technologies facilitate rapid prototyping, enabling designers to visualize and evaluate products at early stages of development. Additionally, the integration of data analytics in production processes allows companies to optimize production schedules, minimize waste, and enhance quality control, leading to greater cost-effectiveness and sustainability.

As technology continues to evolve, it has also revolutionized marketing and customer engagement strategies in the fashion and design industries. The rise of social media and e-commerce platforms has transformed the way fashion brands interact with consumers. Social media influencers, virtual try-on solutions, and augmented reality applications have all become integral to marketing campaigns, providing immersive and interactive experiences to potential customers.

Moreover, data analytics and AI-driven personalization enable fashion brands to tailor marketing messages and product recommendations based on individual preferences and behavior. This not only enhances

customer satisfaction but also fosters brand loyalty and customer retention. The continuous integration of technology in marketing and customer engagement has paved the way for a more customer-centric approach, wherein brands can deliver personalized experiences that resonate with their target audience.

In conclusion, the impact of technology on the fashion and design industries has been profound, transforming supply chain management, product designing, production processes, and marketing and customer engagement. RFID technology has optimized supply chain efficiency, 3D modelling and printing have enhanced product design, Industry 4.0 technologies have revolutionized production processes, and AI-driven marketing strategies have reshaped customer engagement.

These real-case business models exemplify the practical applications of technology, leading to increased efficiency, sustainability, and customer-centricity, thus shaping the future of these dynamic and ever-evolving domains. As technology continues to evolve, it will undoubtedly open up new possibilities for the fashion and design industries, inspiring innovation, creativity, and efficiency across the entire product lifecycle.

4.3. *Advancements in supply chain management and logistics*

Advancements in supply chain management and logistics have brought about transformative changes in various industries, including the fashion and design sector. These advancements leverage technology, data analytics, and innovative strategies to optimize the flow of goods, reduce costs, enhance efficiency, and improve customer satisfaction. This section explores key advancements in supply chain management and logistics, delving into various aspects such as demand forecasting, inventory management, transportation, warehousing, sustainability, and emerging technologies.

Demand Forecasting and Inventory Management:

One significant advancement is the utilization of real-time data and analytics for demand forecasting and inventory management. Traditional forecasting methods often relied on subjective judgments, leading to inaccurate estimations. However, with the emergence of advanced techniques like quadratic exponential smoothing, businesses can now establish more accurate mathematical models for demand forecasting, as demonstrated by Xi and Sha (2014). Companies like Walmart have implemented sophisticated algorithms that analyze vast amounts of data, including historical sales, market trends, and customer preferences, to accurately forecast demand. This enables them to optimize inventory levels, reduce stockouts and overstocking, and improve overall supply chain efficiency. Similarly, companies like Coca-Cola employ advanced demand-sensing technologies that leverage machine learning algorithms and data from various sources to anticipate shifts in consumer demand, ensuring optimal inventory levels and minimizing stockouts (Why Demand Forecasting Is Crucial for Companies, 2023). These advancements in demand forecasting and inventory management help businesses streamline operations, reduce costs, and enhance customer satisfaction.

Supply Chain Visibility and Traceability:

The Internet of Things (IoT) has emerged as a game-changer in supply chain integration and logistics. IoT involves a network of interconnected devices, enabling seamless data exchange and communication between physical objects. In the context of supply chains, integrating IoT capabilities can lead to intelligence, autonomy, and pervasive applications throughout the entire process (Vass, Shee, and Miah, 2018). It has been highlighted how IoT capabilities positively impact various dimensions of supply chain process integration, such as internal, customer, and supplier-related aspects. The results indicate that IoT integration leads to improved supply chain performance and overall organizational performance. The data-driven insights from IoT devices enable real-time monitoring and decision-making, optimizing inventory levels, minimizing disruptions, and enhancing the efficiency of supply chain operations.

Transportation and Last-Mile Delivery:

The last mile delivery, the final leg of the supply chain that involves delivering products to the end consumers, has become a critical focus area due to the rise of e-commerce and online shopping. Tiwapat, Pomsing, and Jomthong (2018) conducted a study that discusses the various modes of last-mile delivery, including reception boxes, collection points, post offices, and attended and unattended home deliveries. Each mode is compared based on its characteristics and efficiency from different stakeholders' perspectives. To enhance the efficiency of last-mile delivery, emerging technologies such as the Internet of Things, smart devices, social networks, and drones are being explored. These technologies enable route optimization, real-time tracking, and efficient coordination between delivery personnel and customers. By improving last-mile delivery, businesses can provide faster and more reliable service, leading to increased customer satisfaction and loyalty. Companies like Amazon have leveraged automation and robotics to optimize their logistics operations. Amazon's use of autonomous delivery drones for last-mile delivery aims to expedite the delivery process and enhance customer convenience (Banker, 2022). Furthermore, route optimization algorithms and advanced fleet management systems enable companies to minimize transportation costs, reduce emissions, and enhance delivery speed. For instance, UPS has integrated data analytics and GPS tracking to optimize routes, reduce mileage, and enhance fuel efficiency (Marr, 2018). These advancements in transportation and last-mile delivery help businesses achieve faster delivery times, reduce costs, and meet evolving customer expectations.

Warehousing and Order Fulfilment:

Autonomous warehouse robots have emerged as a crucial technological advancement in supply chain management and logistics. Rahman, Kanchi, Pasha, and Yadla (2021) researched designing and developing autonomous warehouse management robots with intelligent software frameworks. These robots play a vital role in maintaining an efficient and systematic warehouse, enabling thousands of cartons and cargo to be organized without human intervention. The autonomous robots can transport inventory within the warehouse and interact with applications like e-commerce platforms, enabling seamless access to products for dealers and consumers. By automating tasks such as order tracking, shipment, picker routing, and storage slotting, businesses can achieve faster, more efficient, and more robust inventory management. The integration of autonomous robots in warehouse operations enhances productivity, reduces human errors, and optimizes storage space, leading to significant cost savings and improved supply chain performance. Moreover, the integration of artificial intelligence (AI) and machine learning algorithms enables predictive maintenance of warehouse equipment, reducing downtime and improving overall operational efficiency. These advancements in warehousing and order fulfilment optimize operational efficiency, reduce costs, and enhance the speed and accuracy of order processing.

Sustainable Supply Chain Practices:

Advancements in supply chain management have also led to a greater focus on sustainability and environmental responsibility. Companies are incorporating sustainability practices into their supply chains to reduce carbon footprint, optimize energy usage, and promote ethical sourcing. For instance, fashion retailer H&M has implemented sustainable sourcing practices by using organic and recycled materials in their products, reducing waste through recycling programs, and improving transparency in their supply chain (Shen, 2014). Furthermore, blockchain technology has emerged as a tool for traceability and transparency in sustainable supply chains. Companies like Provenance utilize blockchain to track and authenticate sustainable and fair-trade products, enabling consumers to make informed choices. These advancements in sustainable supply chain practices help businesses achieve environmental goals, meet consumer demands for sustainable products, and enhance brand reputation.

Emerging Technologies in Supply Chain Management:

The ongoing advancements in technology continue to shape the landscape of supply chain management. Emerging technologies such as artificial intelligence (AI), machine learning (ML), robotic process automation

(RPA), and predictive analytics hold immense potential for further optimization. AI and ML algorithms can analyze vast amounts of supply chain data to identify patterns, make accurate predictions, and enable proactive decision-making. RPA can automate repetitive tasks, enhancing operational efficiency and reducing errors. Predictive analytics can help businesses anticipate and mitigate supply chain risks, ensuring uninterrupted operations. Companies like IBM are investing in these technologies to unlock new possibilities and drive continuous improvement in supply chain management (Predictive Analytics in Supply Chain, 2023).

In conclusion, technological advancements have had a profound and positive impact on supply chain management and logistics. From improved demand forecasting using sophisticated mathematical models to the integration of IoT for data-driven decision-making and efficient last-mile delivery solutions, businesses are leveraging these innovations to optimize their supply chains. Additionally, the adoption of autonomous warehouse robots is transforming traditional warehouse management practices, leading to increased efficiency, reduced costs, and enhanced overall supply chain performance. As technology continues to evolve, the potential for further advancements in supply chain management and logistics remains promising, enabling businesses to meet the evolving demands of the modern market and stay competitive in a rapidly changing landscape.

4.4. *Opportunities for digital transformation and innovation*

Opportunities for digital transformation and innovation in the fashion and design sectors hold the capacity to drive sustainability and address critical environmental challenges. Technology plays a focal role in enabling sustainable practices across various aspects of the industry, including materials innovation, waste reduction, energy efficiency, and circular economy approaches. By leveraging digital transformation and innovation, the fashion and design sectors can foster environmentally responsible practices and contribute to a more sustainable future.

One area where technology can drive sustainability is materials innovation. Advancements in biotechnology offer opportunities to develop sustainable alternatives to traditional materials. Bio-based materials, such as plant-based textiles and bio-synthetic fabrics, can be created through techniques like bioengineering, genetic modification, and nanotechnology. These innovative materials have a lower environmental footprint, offering enhanced durability, reduced resource consumption, and biodegradability. By incorporating these materials into their products, fashion and design companies can reduce their environmental impact and promote sustainability.

Another key aspect where technology can enable sustainability is waste reduction. The fast-paced nature of fashion trends, coupled with the "throwaway culture," has led to the accumulation of vast amounts of textile waste and discarded clothing. Addressing waste reduction in the fashion industry is crucial for achieving sustainable and environmentally responsible practices. Digital transformation and innovation present avenues for minimizing waste generation in the fashion and design industries. Technologies like 3D scanning, virtual prototyping, and computer-aided design (CAD) facilitate efficient design processes, reducing the need for physical prototypes and minimizing material waste. Furthermore, the adoption of data analytics and artificial intelligence (AI) can optimize supply chain management and demand forecasting, enabling better inventory management and reducing excess production and unsold inventory that often end up as waste. Additionally, innovative recycling and upcycling technologies, such as chemical recycling and textile-to-textile recycling, can transform textile waste into new materials, extending the lifecycle of resources and minimizing landfill waste.

Energy efficiency is another critical aspect that technology can enhance in the fashion and design sectors. By embracing digital transformation and innovation, companies can achieve greater energy efficiency throughout their operations. The use of smart sensors and automation in manufacturing processes allows for precise control over energy consumption, optimizing resource utilization and reducing greenhouse gas emissions. Moreover, integrating renewable energy sources like solar and wind power can reduce the

reliance on fossil fuels in manufacturing and distribution operations, contributing to the overall energy efficiency of the industry. Advanced data analytics and AI algorithms can further identify energy-saving opportunities, optimize logistics routes, and reduce energy-intensive activities, enhancing energy efficiency in the supply chain.

Circular economy approaches can also be facilitated by digital transformation and innovation. Technologies like blockchain and RFID enable traceability and transparency throughout the supply chain, facilitating effective management of product lifecycles and ensuring the tracking and authentication of sustainable practices. Digital platforms and online marketplaces promote the sharing and resale of pre-owned fashion items, extending their lifespan and reducing the demand for new production. Additionally, advancements in textile sorting and recycling technologies facilitate the separation and processing of textile waste, enabling the creation of high-quality recycled materials for new products. By embracing these circular economy approaches, the fashion and design industries can reduce waste, conserve resources, and minimize their environmental impact.

In conclusion, digital transformation and innovation provide significant opportunities for driving sustainability in the fashion and design sectors. By leveraging technology, the industry can embrace materials innovation, reduce waste, enhance energy efficiency, and adopt circular economy approaches. These advancements enable companies to minimize their environmental footprint, promote sustainable practices, and contribute to a more responsible and circular fashion and design industry. Embracing digital transformation and innovation is crucial for shaping a more sustainable future for the fashion and design sectors.

5. Emerging Business Models

5.1. Overview of new business models in the fashion and design industry

Resale, rental, repairs, and remaking are business models which companies can make growth without making new clothes. According to Ellen MacArthur Foundation, this could provide greenhouse gas savings and could be worth USD 700 billion by 2030, making up 23% of the global fashion market (Ellen MacArthur Foundation, n.d.).

The same source states “Between 2000 and 2015, clothing production doubled, while over the same period utilization – the number of times an item of clothing is worn before it is thrown away – decreased by 36%. This trend led to the global fashion industry producing around 2.1 billion tons of greenhouse gas (GHG) emissions in 2018 – 4% of the global total. Even the profit margins of the world’s leading apparel retailers decreased by an average of 40% from 2016 to 2019. This was exacerbated in 2020 by the impacts of the Covid-19 pandemic, which highlighted the fragility of fashion’s supply chains and saw the industry suffer a staggering 90% profit decline compared to 2019.” (Ellen MacArthur Foundation, n.d.).



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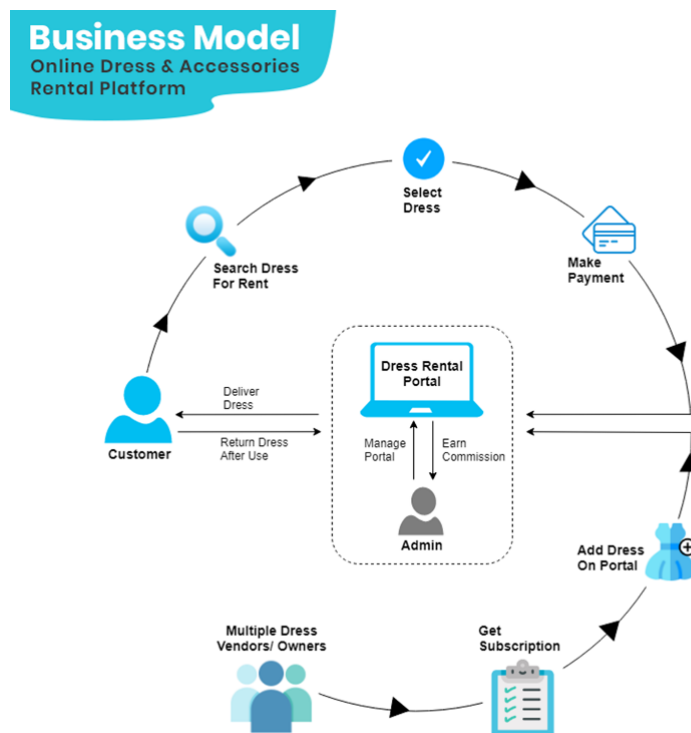
Through business models such as resale, rental, repair, and remaking – greenhouse gas emissions, pollution, and biodiversity impacts can all be reduced.

According to the data provided by Ellen MacArthur Foundation “Resale, rental, repair and remaking are already worth more than USD 73 billion – and growing. Since 2019, seven resale and rental platforms – Depop, Rent the Runway, The Real Real, Vinted, Poshmark, Vestiaire Collective, and ThredUP – have reached billion-dollar valuations.” (Ellen MacArthur Foundation, n.d.).

Even COVID did not influence that. Predictions are that their potential is to grow from 3.5% of the global fashion market today to 23% by 2030. They could also provide significant environmental savings from increased use and reduced production (Ellen MacArthur Foundation, n.d.).

What are these business models:

1. RENTAL – which includes one-off rentals peer-to-peer by private owners, as well as large-scale rental and subscription models by multi-brand platforms or individual brands.



Source: <https://www.fatbit.com/fab/launch-designer-dress-rental-portal-with-top-website-features/>

2. RESALE – this includes peer-to-sale of second-hand items, third-party marketplaces and own-brand re-commerce and take back –both online and offline
3. REPAIR – process in which a faulty or broken product or component is returned back to a usable state
4. REMARKING – a process in which a product is created from existing products or components. This includes disassembling, re-dyeing and repurposing.

Through circular business models, companies can have both revenue and cost benefits. They enable businesses to offer new services, such as restoration, customization and tailoring. Increased loyalty, access to customers and product use data, and increased customer base affects revenue in a good way. On the other

hand, costs can be reduced due to savings from better resource productivity and risk reduction. To successfully develop circular business models, their revenue must be decoupled from production and resource use, but there are many barriers to this decoupling (Ellen MacArthur Foundation, n.d.):

- the way the industry measures success is often based on sales volumes (a business measuring its success this way might incentivize product take-back for resale, remaking or recycling by offering vouchers for new products, which results in the growth of the linear business)
- products are not always designed to withstand the level of use circular business models require (a suit offered via a rental model that looks faded or out of shape after it is cleaned twice will not provide a viable option, economically or environmentally)
- supply chains are optimized for predictable, one-way production and distribution, whereas circular business models require local and global networks (which facilitate services such as cleaning, repair, and remaking)

Besides these mentioned above, some industry enthusiasts say that there are a few alternative sustainable fashion business models reimagining the fashion system (Hertantyo, 2023):

1. **Co-Operatives:** As Ngozi Okaro of Custom Collaborative shared in a recent Conscious Style Podcast episode, “A worker cooperative is like any other business, except for the people who work in the company, also own it and make all important decisions. This is a really important way to not only provide people with ownership opportunities but to also spread values of democracy in collective work.” (Hertantyo, 2023b). It is a business model where makers are the ones that also run, own and profit from manufacturing, which makes the whole business more ethical and equitable. An example of such business is Custom Collaborative, Manos del Uruguay (Uruguay), and Andel (Scandinavia).
2. **Social Enterprises:** It is a business that focuses on creating positive social impact. In the fashion industry, social enterprises are often artisan-led for the preservation of traditional skills. The profit made from social enterprises is invested back into artisan communities. Examples of fashion social enterprises are Artisan Fashion (different African countries), Ozara (Tajikistan), CABES (Burkina Faso), and Birdsong (United Kingdom).
3. **Waste-Led Design and Upcycling:** Upcycling involves creating new garments through cutting and stitching discarded clothing and other fabrics. It extends the time of outdated clothes by creating something new and prolonging their use. According to McKinsey Sustainability for every 5 garments produced, the equivalent of 3 end up in a landfill or incinerated each year (Magnin and Hedrich, 2019). This is a business model focused on upcycling, working with waste, and finding solutions to give old textiles a new life. Brands that work with waste and upcycling include La Reunion, Emeka, and NKWO. To increase the lifespan of clothes there is a number of attractive options at the disposal of the textile economy, some of them are listed below (Magnin and Hedrich, 2019):
 - Fashion subscription models, where customers pay a monthly fee to have a fixed number of garments on loan at any one time.
 - Repair options encourage customers to buy fewer articles of clothing, invest in ones that they truly need, and consider holding onto the ones they have for longer
 - Enhanced resale models are an opportunity for unwanted clothes durable enough to be used again. There is an option to sell used clothing alongside new clothing, which could help with repositioning resale from a fringe to a mainstream activity.

4. Non-New Ownership Business Models: use circular fashion business models that go beyond ownership and are encouraging a sharing economy. This means making the most of clothing that is already in circulation. Some examples are buying second-hand, renting, and clothes swapping. Online platforms where you can swap are Nuw, Swopped, Swap Society and if you want to go for a rental there are ByRotatipon, Tulerie and Wardrobe.
5. Service-Based Business Models: This model is focused not only to change the way how we buy, but how we look after what we already own too, this refers to finding ways to make our clothes last so that we can wear them for as long as possible. Service-based slow fashion business models provide various services that help customers get years of wear out of our clothing. This includes tailoring services, mending services, and sustainable stylists.
6. Made-To-Order Business Models: Fashion today is fast, and slow fashion brands are challenged because they are producing the garment once a customer has placed an order. Customers have to wait for a longer time before getting their order, but this approach reduces waste because only garments that are ordered are produced. Examples of brands using made-to-order fashion business models include Cawley, Chalsie Joan, Chelsea Bravo, and Mary Benson
7. Permanent Collection Business Models: Today some of fashion brands are choosing quality over quantity by only producing one collection per year, even though fashion marketing is trying to convince us that we need the next best thing. This slow fashion brands like Asket, Beuna Onda and Mosaert prioritize creating clothing that will last for many years.

Currently, there is no potential roadmap for the traditional textile industry to move away from fast fashion and into a business model that is sustainable and fair by design. There is a question if a textile company wants to be sustainable, fair, and zero waste by design what are the criteria to do that (Kohan textile Journal, 2023)?

1. Design has to be made for physical and emotional durability

Physical durability refers to the technical capacity of enduring intensive use and many washing cycles. On the other hand, emotional durability means being able to live through trends and not going out of fashion, be recyclable at the end of its life. For example, some of the trends, like the 80s will be forgotten soon, even though technically there is nothing wrong with these items. The durability of design means timeless styles and modifiable patterns, and still having room for options and tips for personalization.

2. Demand-driven production – design and unsold discounts

In order to address the root cause of overproduction, it is crucial to change the business model from a supply- to a demand-driven one. Researches shows that between 10% and 60% of all that is ever produced is never sold or is sold at discounted prices, and between 20% and 30% of what is sold online is returned and rarely put back on sale. In conclusion, producing on demand is a very effective way to design out unsold and change the cost structure of the business, it is great for personalization of styles in line with the taste of the consumer.

3. Full supply chain transparency and traceability post-sale

If a company knows where components are sourced and how they were produced, it can guarantee the quality and fairness of all its products and services. If there is the long supply chain, they make transparency harder and blur responsibility. “More local supply chains allow us to connect the consumer to the producer and help build the emotional link between the individual and the garment, which helps to fight the current disposability mindset. It also allows for the creation of secondary raw material markets so that recycled content and used fibres are effectively used for new clothes. “ (Kohan textile Journal, 2023). If there is transparency, child and labour exploitation, as well as the use of toxic products and additives, will be a lot more difficult to hide, with the likely consequence of resorting to materials and products produced closer to the consumer.

4. Extending the use phase after the first ownership

This is a phase where reuse and repair are no longer an option and fibres can go back to the producer for take-back, repair, redye, remodel and/or recycle. This is also a step where initiatives like rebuy, collect and resell are encouraged, or the company supports clothier libraries, charities and any other option which gives extra life to used clothes.

5.2. *The rise of e-commerce and online retail*

The fashion sector is more unpredictable than ever thanks to rising inflation and supply chain pressure. Digital innovation, rising globalization, and changes in consumer spending habits have catapulted the fashion industry into major shifts. As latest e-commerce trends that can work long-term fashion sales strategy stand out (Keenan, 2022):

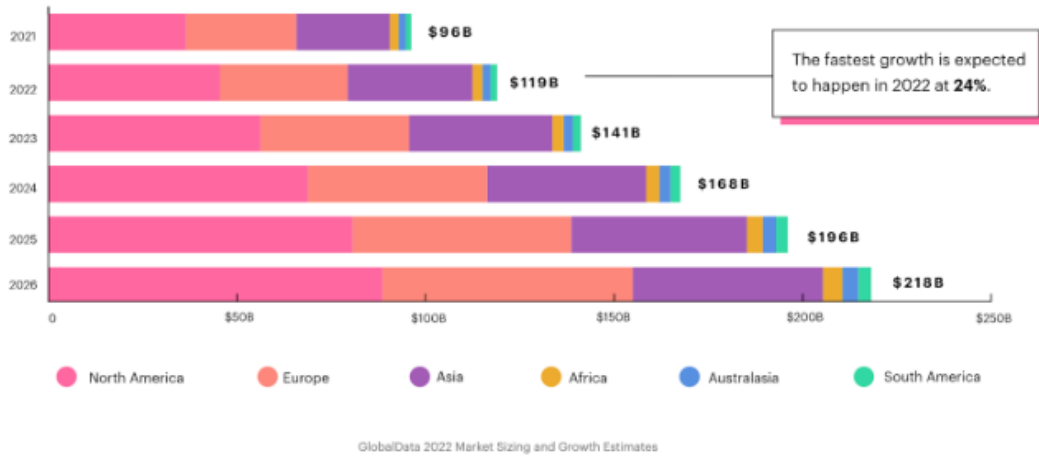
- Personalization is a balancing act
- Into the metaverse
- Brand-building over paid ads
- Sustainability at the forefront
- Social commerce
- The transition back to brick-and-mortar

Listed below are the top fashion e-commerce trends in 2023 by Keenan in his report for Shopify.

1. The rise of resale

In the Shopify report, Keenan states that the second hand is a global phenomenon, that resale grew 24% in 2022 and is expected to reach a \$218 billion market valuation by 2026. Some of the premium fashion brands are launching a resale program that allows customers to send in pre-owned products in exchange for store credit. It remains unclear whether fast fashion brands will be able to capitalize on the resale market in the same way luxury and premium brands have.

The global secondhand apparel market will grow 3X faster than the global apparel market overall.



Source: Shopify.com, <https://www.shopify.com/enterprise/e-commerce-fashion-industry>

2. Personalizing the customer journey

Shopify research shows that 44 % of customers are OK with brands using their personal information to personalize messaging and improve customer experiences, for example, product recommendations. According to the same resource, by showing items customer was previously interested in, or retargeting them based on the activity they’ve had with companies’ e-commerce, companies are providing a tailored online shopping experience—one that convinces customers to buy.



Source: <https://www.shopify.com/enterprise/e-commerce-fashion-industry>

On the other hand, there is a fine line, because online shoppers are increasingly concerned about their privacy. Brands that do too much personalization are more likely to be abandoned by shoppers.

An example of perfect balance is Culture King, as Keenan states in the Shopify report, it built four global storefronts to sell in different currencies, and as a result of that is that more than half of the fashion brand's revenue now comes from its e-commerce business.

3. Brands experimenting with the metaverse

Although the term „metaverse“ is open to interpretation, the idea behind is that people can conduct daily activities by using AR or VR technology.

Non-fungible tokens (NFTs) are types of item that functions both in and out of the metaverse—unique digital tokens that can only be owned by one person, paid for in virtual currency such as crypto. “Data shows \$87.03 million was spent on NFTs on January 1, 2022, alone”.

For example, Keenan reports that Under Armour is using NFTs in the retail space, where digital NFTs are released together with the physical product launch. Owners of NFTs can virtually wear the shoes in three metaverses: Decentral and, The Sandbox, and Gala Games.

In his report, Keenan cites Ana Andjelic who states that some communities, like Fortnite, inspired Balenciaga's designs, and that this means that fashion companies can move towards becoming creative collectives, with each collection they can have their own identity within the brand universe, reputation and community.

To fit in the metaverse community, some designers are using Roblox (a global platform that brings people together through play) to create experiences for users and reach Gen Z audiences.

4. Sustainability at the forefront

The fashion industry is often under criticism, especially fast-fashion brands. According to the Shopify report, Statista's research shows 42% of global customers purchase eco-friendly and sustainable products. Certain countries are leading the trend—online shoppers in Vietnam, India, and the Philippines purchase sustainable products more often. The pandemic has also influenced this, and the trend of resale is blooming.

5. More investment in social commerce

Even though our smartphone addiction is out of control and social media plays an integral role in the e-commerce marketing strategy of many online fashion brands, the truth is that social media is no longer a place for shoppers to consume a new fashion trend. Manny's social media platform is evolving its business models to facilitate in-app shopping. Here are the engagement rates for global fashion brands on social media: Instagram 0.68%, Facebook 0.03%, Twitter 0.03%.

Consumers like to see videos of products before buying, and TikTok and Instagram are praised for driving sales for large fashion brands. Social media platforms are creating their own commerce features – like Shopping on Instagram, and Facebook Shops. Livestream shopping is also at its peak.

6. The transition back to brick-and-mortar

The shopping experience is more complex than ever, some returns happen because the product ordered online looks differently in the flesh. According to Keenan, modern consumers want both online and offline sales channels and synergy between the two:

- 54% of consumers are likely to look at a product online and buy it in a physical store.
- 53% envision themselves doing the opposite: viewing products in-store and buying them online.
- 55% of consumers want to browse products online and check what's available in local stores.
- Over 50% of adult shoppers use BOPIS, with 67% adding extra items to their carts when they can pick them up immediately.

7. Investments in YouTube Shorts

Short-form video platform YouTube Shorts is gaining traction among fashion brands and creators. Brands like Nike, and American Eagle have already added Shorts to their marketing mix together with luxury brands like Gucci, and Christian Dior on board. Keenan states that shorts are seen more than 30 billion daily views and that they attract 1.5 billion monthly users according to YouTube.

This is the way brands could gain subscribers without investing in long-form video, receive high engagement rates and boost sales. Shopify and YouTube are teaming up to give merchants and creators a powerful new way to connect to consumers, build their businesses and share their stories.

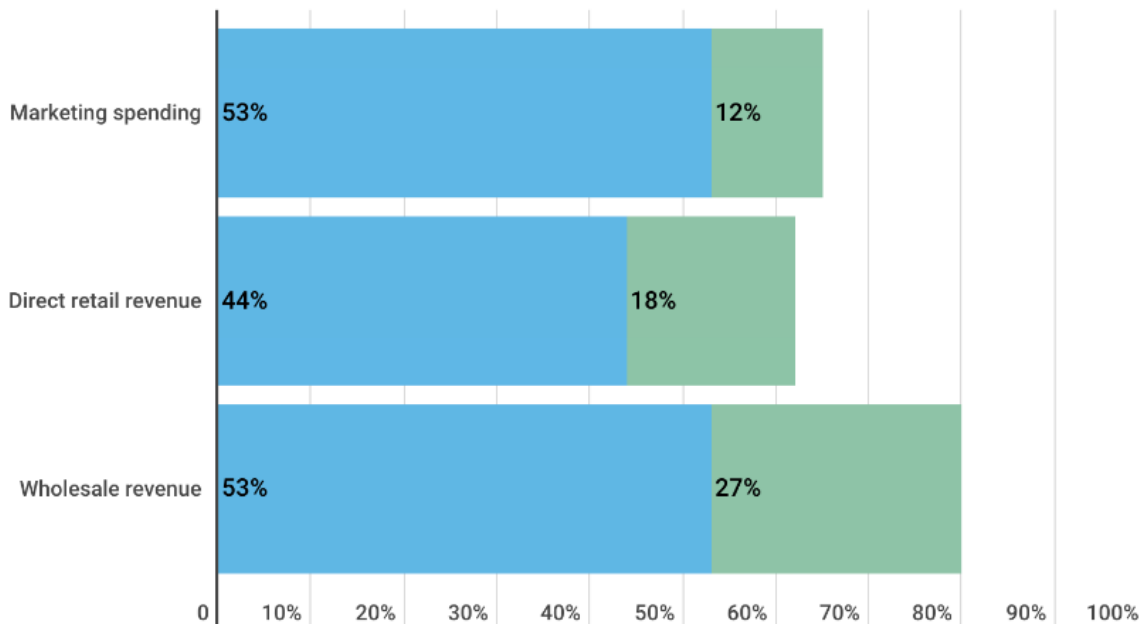
8. Expanding into repair services

This is a form of sustainability since the fashion industry has become more aware of its environmental impact. Some of the brands have opened repair centres (Patagonia and Arc'teryx), some give a lifetime warranty on their products (Bottega Veneta) and Louis Vuitton offers to repair any bag for a price depending on the item and type of repair.

9. The shift to wholesale

The main reasons for shifting of DTC brands (Direct-to-Consumer) to wholesale are inflation, supply chain issues, lack of consumer spending... The year 2023 marks a turning point for DTC brands rushing into wholesale. Supply chain disruptions are making direct channel fulfilment increasingly harder, harming profits. Wholesale partnerships may be the solution for the survival of DTC brands in the coming years.

'Thinking about the next 12 months, do you expect each of the following to increase for your company?'



Source: Modern Retail and Glossy survey, Summer, 2022
Sample: 34 direct and traditional brands

Source: <https://www.shopify.com/enterprise/ecommerce-fashion-industry>

5.3. Direct-to-consumer models and their impact

DTC or Direct-to-consumers is when a brand or manufacturer sells its own products to its end customers. This is the DTC model, which involves selling products without the help of third-party retailers or wholesalers. The characteristic of this model is:

- These brands manage their own product stock levels – when customers place orders, the brand is in charge of sorting, packaging and shipping the products
- The brands do not need to rely on third parties to source or deliver the goods
- These brands are communicating with customers directly and are in control of the fulfilment experience

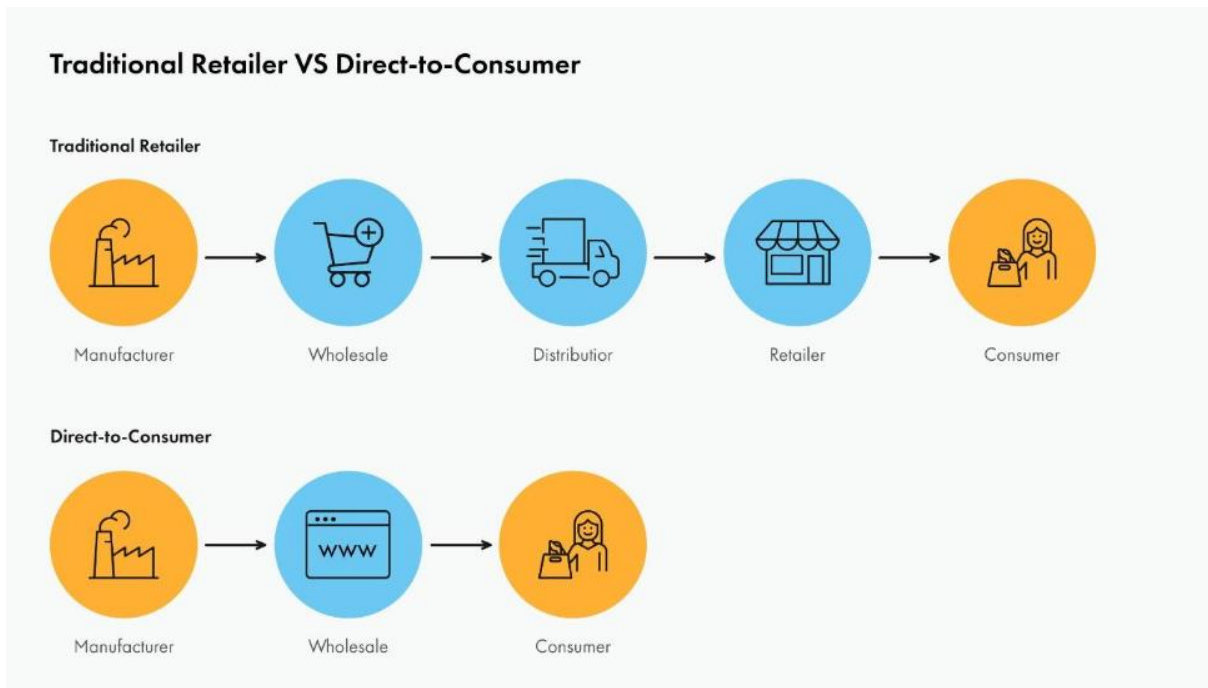
This retail model is growing in popularity because it brings brands closer to customers, these DTC brands directly interact with customers and by going DTC brands also get a better understanding of who's buying their products and why.

Elimination of several steps of the buying cycle, which provides a more efficient customer experience is one of the characteristics of DTC. Comparing Direct-to-consumer with wholesale means that DTC means selling your own products to the customer yourself instead of selling through a platform like Amazon or a retailer like Nordstrom. On the other hand, a wholesale model is when producers sell them. In this case, the retailer acts as a middleman by marketing and selling this product to consumers. The goal of the DTC model is to lower costs and enhance profits by removing retailers' sales commissions and display space costs.

The main diversity between these two models is:

- Traditional wholesale/retail model – manufacturer-wholesaler-distributor-retailer - consumer

- DTC model – manufacturer – advertising/website – end consumer



Source : DataArt, <https://www.dataart.com/industries/retail-and-distribution>

Some brands, for example, Nike choose a combination of both and get the best from both. On the other hand, attempt to strengthen the customer relationship you can sidestep trusted retail partners. It is a delicate balance between maximizing your brand's DTC reach and trying not to end relationships with established retailers (Square, 2023).

Pros of DTC

- Ability to build relationships directly with end users
- Hyper-focused on their customers (60 % of them will appreciate the attention and purchase directly from brands)
- Collecting insights that help improve business and product offering
- Collecting the highest –possible profit from the sale since there is no splitting the earnings with a retailer

Cons of DTC

- Purchase from consumers will usually come in smaller quantities and without a set cadence (the opposite of that is wholesale where the order is larger and can be more reliable, especially with consumable or trending products)
- Complex logistics of shipping individual units (establishment of a system in place for packaging individual pieces)
- Individual returns (time-consuming and detrimental to the bottom line)
- Marketing to consumers, which can be a significant expense, but in the end you gain more control over your messaging

If DTC efforts only focus on making sales, there will be a conflict and competition with your retailers, this could hurt both of your businesses. However, the best way is to start by differentiating product offerings from the items you sell through your outside retailers through your website. There are a few types of selling:

1. Hold back certain items to sell exclusively to consumers
2. Take apples-to oranges approach by selling items in different ways (different product sizes than those available through retailers...)
3. creating a distinct offering is by adding a complementary product direct to consumers that enhances the products available through your retailers (offering accessories on your site like hats etc.)

There is still a lingering idea that DTC is innovative, but this is not the case anymore, the process of how you do it knows that's innovative. Successful DTC e-commerce brands are knowing how effective digital marketing can be and what is the best way to leverage it (Big Commerce, 2023).

Collaboration with influencers to reach new audiences (YouTube, TikTok, Instagram) is a quick and effective way to get your messaging in front of thousands of new customers. Reward customers by spreading the word about your products, Important part is to give the customers the opportunity to pay and receive products how they want. Offer multiple options of shipping from the express to standard, this should also be the case with payment options. Another thing to do is include transparent feedback and reviews on e-commerce platforms, even the negative ones (which should have added context) that can help set realistic customer expectations.

Covid-19 has accelerated the massive consumer shift to digital channels. Many companies have been active in launching new DTC programs during the pandemic. Some big companies such as PepsiCo and Kraft Heinz have both launched new DTC suggestions in recent months (Arora et al., 2020). In conclusion, the DTC model can help to control the entire customer experience, it makes it easier to start a business and get higher profit margins.

5.4. Collaborative and circular business models

Circular fashion is a system where our clothing and personal belongings are produced through a more considered model – a model where the production of an item and the end of its life are equally important. This approach is focused on longevity, going a step further from the end of utilizing a product until the end with the goal of repurposing it into something else.

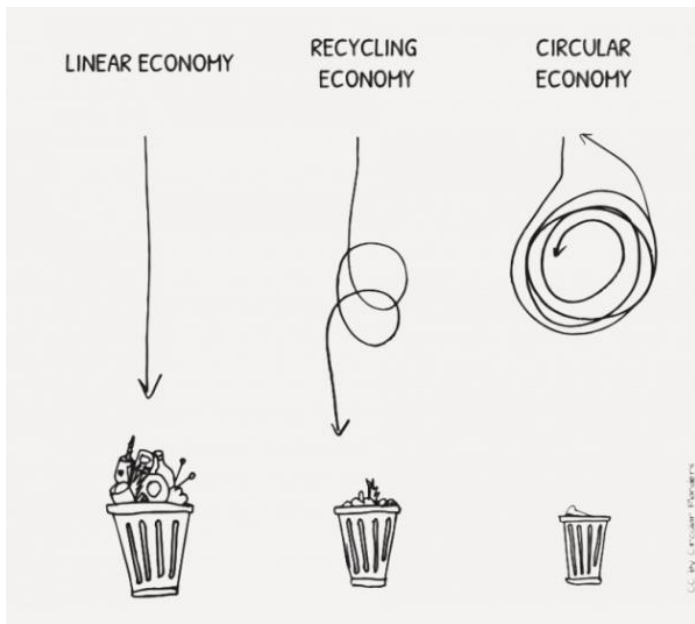
Companies and consumers recognize the need for more sustainable practices so this is becoming recognizable practice for the fashion and design industry. These models are oriented on reducing waste, promoting of efficiency of resources, and fostering collaboration throughout the value chain. There are a few examples of collaborative and circular business models and design:

- Clothing rental platforms – which offer fashion and rental services, allowing customers to rent clothes and accessories for a specific period instead of purchasing them. This is the model that promotes sharing and reduces the demand for new clothes items, and in that way minimizes waste.
- Resale – online platforms such as ThredUp and Depop facilitate the resale of pre-owned clothing and accessories, by selling their used items individuals extend their lifecycle and reduce the need for new production

- Collaborative consumption – through platforms Yerdle and ShareWear we can promote the sharing of fashion items among a community of users, here the consumers borrow clothes, encouraging a more collaborative and sustainable approach to fashion consumption
- Upcycling and repurposing – as a base for creating new products, they take discarded or unused materials and transform them into unique and high-value fashion items, reducing waste and promoting creativity
- Product-as-a-service - model ensures that products are used more efficiently and can be repaired or recycled at the end of their life. For example, instead of buying a light fixture, customers can subscribe to a lighting service where they receive regular updates and maintenance
- Material recycling and closed-loop systems –a system like this reduces the need for new materials and minimizes waste, this is an approach where materials from old or damaged products are recycled to create new ones. By applying this approach companies encourage customers to return their old products for recycling or offer take-back programs.

Madeleine Hill (2022) in her article for “Good on You” outlines a few key assumptions of circular fashion which are listed below:

- “Using less materials when producing individual items for increased recyclability
- Working to remove nonrecyclable and polluting materials from the supply chain
- Recapturing everything from garment offcuts to packaging for reuse
- Ensuring use and reuse for as long as possible
- Returning any unavoidable waste to nature safely”



Source: Good on you, <https://goodonyou.eco/what-is-circular-fashion/#>

This process cannot go without challenges, it requires a radical shift in mindset, behaviour and practice. There is a lack of knowledge about the concept and benefits of circular economy, and inadequate infrastructure and technology for collection. There are also great benefits for fashion brands, such as reducing costs and risks by saving on raw materials, energy, and water as well as increasing resilience to resource scarcity. This can also drive innovation and creativity by exploring new design possibilities, business models, partnerships

and technologies. It also creates value and impact by generating new revenue streams, increasing customer satisfaction and retention as well as contributing to the social and environmental well-being of the planet (Fahy, 2023).

Collaborative business models in fashion and design involve partnerships and cooperation among various stakeholders within the industry. These models aim to leverage the strengths and resources of different actors to create mutually beneficial outcomes. Here are some examples of collaborative business models in fashion and design:

1. Co-design and co-creation: Designers, brands, and consumers collaborate to co-design and co-create products. This means engaging customers in the design process, allowing them to provide input and customization options. Through this brand can better meet their preferences and create more desirable and sustainable products
2. Partnership with artisans and craftsmen: it is a process where brands collaborate with skilled artisans and craftsmen to create unique and high-quality products. Partnerships like that provide artisans with fair wages and opportunities for their traditional craftsmanship to thrive, while brands gain access to unique skills and heritage techniques.
3. Cross-industry collaborations – when F&D collaborate with business from different industries to create innovative and sustainable solutions, e.g., when fashion and design brands collaborate with technology companies and create wearable technology and smart textiles. Different expertise drives innovation in that case
4. Supplier partnership for sustainable sourcing: brands work closely with suppliers to ensure responsible sourcing of materials (develop sourcing strategies, promoting transparency in the supply chain, implementing certifications for ethical and eco-friendly production practices)
5. Collective production and manufacturing – this is a situation where brands and designers pool their resources to share production facilities, equipment, and expertise, by sharing production infrastructure, they can optimize resource utilization and reduce costs. This model is a great opportunity for small and emerging designers who may not have the capacity for large-scale production on their own.
6. Collaborative marketing and retailing – brands and designers collaborate on marketing campaigns and retail spaces to amplify their reach and visibility. This can include joint pop-up shops, co-branded marketing activities, or collaborations on fashion shows and events. In that way, brands can access new customer bases and create a more engaging and immersive retail experience
7. Knowledge-sharing and industry networks – industry organizations, educational institutions, and fashion communities facilitate knowledge-sharing and collaboration among designers, brands, and professionals. Their networks provide platforms for exchanging ideas, best practices, and resources, fostering innovation and sustainability in the fashion and design industry.

Overproduction represents the biggest environmental impact of the fashion sector, but the legislative tools considered to date focus on products and waste, rather than on systematic factors or business models. Labels that should help consumers to make sustainable choices are currently limited to toxicity, circularity, and transparency, but lack a systematic approach which could lead to fostering a desirable and sustainable business model. The current push to increase the circularity of fashion products is a step in the right direction but insufficient to change the current business models, so the efforts of the sector to move towards sustainable production could paradoxically lead to a higher environmental impact if the model continues to be based on overproduction.

There have been 4 criteria identified which, when applied simultaneously could be considered as key to identify what a virtuous business model that goes beyond circularity should look like. These are:

1. Design for physical and emotional durability
2. Demand-driven production to phase out unsold and discounts
3. Full supply chain transparency and traceability post-sale
4. Extending the use phase after the first ownership

There is a difference between sustainable textile products and sustainable textile business models, but since textiles are also a relatively new field for policy intervention more action would be needed in the fields of (Kohan Textile Journal, 2023):

- Gains, costs, and externalities associated with a radical change of the current business model to one that is fair, sustainable, and zero waste
- Fashion and climate – observing the carbon budget available for the sector as a way to inform future legislative steps
- Fashion and biodiversity – studying the impact of fast fashion on the current biodiversity decline
- Identification of existing best practices from a business model perspective
- Design policies to encourage the transition to, or/and creation of, new business following the aforementioned criteria

In 2022, the European Union published the EU Textiles Strategy, which states (Kohan Textile Journal, 2023):

“By 2030 textile products placed on the EU market are long-lived and recyclable, to a great extent made of recycled fibres, free of hazardous substances and produced in respect of social rights and the environment. Consumers benefit longer from high-quality affordable textiles, fast fashion is out of fashion, and economically profitable re-use and repair services are widely available. In a competitive, resilient, and innovative textiles sector, producers take responsibility for their products along the value chain, including when they become waste. The circular textiles ecosystem is thriving, driven by sufficient capacities for innovative fibre-to-fibre recycling, while the incineration and landfilling of textiles are reduced to the minimum.”

The strategy falls short of suggesting measures to address the underlying issue at hand: the unsustainable business model of the industry. Actors like Ellen MacArthur Foundation have been facilitating processes with the textile industry to increase the circularity of fashion.

There are different perspectives on this matter:

- From the production and marketing side, the amount of unfounded green claims by producers has increased, with many big brands presenting themselves as sustainable based on the use of recycled PET bottles, organic cotton, less chemicals, or fairtrade products.
- From waste sorting - the technology exists to sort different materials and qualities, if EPR systems organize collection and sorting, the necessary technology exists to make it operational, yet it will take decades to build the necessary infrastructure.
- From the recycling point – Europe hosts some recycling plants to recycle natural fibres and some synthetics, Europe also hosts most of the innovation in the field of new materials for textiles, with some claiming to be fully recyclable and even carbon negative

There is a question of whether the problem with fast fashion is mainly related to products or to business models. Can a fast fashion company produce sustainable products and still continue to run a fast fashion

model? There is no sustainable textile product without a sustainable textile business model. Research shows that circularity is a very important component of a sustainable business model, but, most of the gains from an environmental perspective are obtained by avoiding production (Kohan Textile Journal, 2023).

There are few options for an environmental impact

1. Extend the use of materials and avoid purchasing new ones (reduce)
2. Reuse someone else's clothes(reuse), in this way reducing the primary manufacturing of one product albeit risking a rebound effect by replacing the garment of the donor
3. Transforming reused products into new materials, decreasing the use of primary raw materials (recycle)
4. Collaborative consumption, intensifies the utility rate of a product sharing, known as (Paas) Product-as-a-Service. Whether recycling is better than sharing depends very much on the assumptions related to how much transport is needed to rent the product or how intense the emissions associated with production or recycling are, and of course overall recyclability of the garment.

In conclusion, the biggest environmental impact of fast fashion comes from the current overproduction model, which has replaced the traditional tailored production on demand. The legislative measures considered do far focus on products and not on systems or business models. Overproduction is a consequence of an old business model the current approach leaves this point unaddressed. There are many questions about what the zero-waste model is or could be, but looking at above mentioned 4 criteria, this is a path that should be followed.

6. Copyright and Intellectual Property Management

6.1. Introduction

The fashion and design industry is a dynamic and highly creative sector that relies heavily on innovation, originality, and the protection of intellectual property. Copyright and intellectual property rights play a crucial role in safeguarding the interests of designers, brands, and other stakeholders in this industry. The ability to protect and enforce these rights is essential for encouraging creativity, incentivizing investments, and fostering healthy competition. However, the rise of collaborative processes such as co-design and co-development brings forth new challenges that require careful consideration and management of copyright and intellectual property.

6.2. Copyright and Intellectual Property in the Fashion and Design Industry

Copyright Basics

Copyright is a form of legal protection granted to original works of authorship, including designs, illustrations, photographs, textiles, and other creative expressions. In the fashion and design industry, copyright extends to various elements such as fabric patterns, garment designs, logos, and branding materials. It provides creators with exclusive rights over their creations, including reproduction, distribution, display, and creation of derivative works. Copyright protection is granted automatically upon the creation of an original work, providing the creator with a legal framework to prevent unauthorized use or reproduction.

Types of Intellectual Property

While copyright is a vital component of intellectual property's protection in the fashion and design industry, other types of intellectual property rights are also relevant. These include trademarks, patents, and trade secrets. Trademarks protect brand names, logos, and symbols that distinguish a particular brand from others in the market. Patents protect new inventions or functional aspects of designs, providing exclusive rights for a limited period. Trade secrets encompass confidential information, such as manufacturing processes or customer databases, which provide a competitive advantage to businesses.

Importance of Copyright and IP in Fashion and Design

Copyright and intellectual property's rights are of paramount importance in the fashion and design industry. They enable creators to protect their original ideas, designs, and innovations from being copied or misappropriated by others. By having legal protection, designers can monetize their creations, attract investments, and establish a unique brand identity. Moreover, copyright and IP protection promote fair competition and encourage a culture of creativity and innovation within the industry.

6.3. Co-design and Co-development Methodologies

Definition and Overview

Co-design and co-development methodologies have gained significant relevance in the fashion and design industry in recent years. These approaches involve collaboration between multiple stakeholders, such as designers, brands, manufacturers, suppliers, and even consumers, in the creative and development processes of a product. Co-design emphasizes the involvement of end-users or consumers in the design process, ensuring that their needs and preferences are considered. Co-development extends this collaboration to encompass the entire product development cycle, including manufacturing, sourcing, and distribution.

Benefits and Challenges

Co-design and co-development methodologies offer several benefits to the fashion and design industry. By involving multiple stakeholders, these approaches promote different perspectives, fostering innovation and creativity. Collaborative processes can result in improved product functionality, aesthetics, and market appeal, as they incorporate diverse expertise and insights. Moreover, co-design and co-development can enhance consumer engagement and satisfaction, as end-users feel a sense of ownership and involvement in the final product's realization.

However, co-design and co-development also introduce challenges in managing copyright and intellectual property. The collaborative nature of these methodologies blurs the lines of individual contributions, making it complex to define ownership and exploitation rights. Additionally, ensuring confidentiality and preventing unauthorized disclosure of reserved information can be challenging when multiple parties are involved in the development process. These challenges require the definition of clear agreements and strategies for effectively managing copyright and IP in co-design and co-development scenarios.

Collaboration Agreements and Intellectual Property Rights

To address the challenges posed by co-design and co-development, it is crucial to have well-defined collaboration agreements that outline the rights and responsibilities of each party involved. These agreements should explicitly define copyright ownership, exploitation rights, confidentiality, and dispute resolution mechanisms. Key considerations include:

- a) **Copyright Ownership:** Collaboration agreements should clearly define the ownership of copyright in the jointly created work. It is essential to determine whether the ownership will be shared, vested in a particular party, or jointly held by all collaborators.
- b) **Exploitation Rights:** Agreements should specify the scope and limitations of usage rights granted to each party. This includes defining whether the work can be used for commercial purposes, sublicensed, or modified by any of the collaborators.
- c) **Confidentiality:** To protect sensitive information, collaboration agreements should include provisions for maintaining confidentiality throughout the co-design and co-development process. Non-disclosure agreements (NDAs) may be necessary to safeguard trade secrets, proprietary technology, or pre-launch product details.
- d) **Dispute Resolution:** Clear mechanisms for resolving disputes should be outlined in the collaboration agreements to mitigate conflicts that may arise regarding copyright ownership, exploitation rights, or confidentiality breaches.

By establishing comprehensive collaboration agreements, stakeholders can clarify copyright ownership, exploitation rights, and confidentiality obligations, thereby minimizing potential legal conflicts and ensuring effective management of intellectual property in co-design and co-development scenarios.

6.4. Legal Framework for Copyright and IP Protection

International Intellectual Property Laws and Treaties

The protection of copyright and intellectual property in the fashion and design industry is ruled by different international laws and treaties. One of the key international agreements is the Berne Convention for the Protection of Literary and Artistic Works. It provides minimum standards of copyright protection for creative works, ensuring that the copyright holders have automatic protection in member countries. In addition, the Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS) sets minimum standards of intellectual property protection to be respected by EU member states, including copyright's protection.

Copyright Laws in Fashion and Design

Copyright laws vary from country to country, but they generally grant creators exclusive rights over their original works. In the context of fashion and design, copyright protection extends to designs, patterns, sketches, photographs, and other creative expressions. However, it is important to note that copyright protection may not extend to functional aspects of a design, as they may be more appropriately protected by patents or design rights.

In US legislation, there are also fair use or fair dealing provisions, which allow limited use of copyrighted material without the right holder's permission. Fair use for example typically applies to purposes such as criticism, commentary, education, and research.

In the European tradition, the system of copyright's exceptions is completely different from that of the United States. Instead of having a general, flexible exception such as Fair Use, European countries traditionally have a closed list of limitations and exceptions to copyright. The cases in which the use of copyrighted material is permitted are expressly provided by law.

Thus, unlike Fair Use, the cases of free use are limited to very precise hypotheses.

Both the American model of Fair Use and the European model of the closed list of exceptions have their merits and flaws.

Fair Use does not fit well with the principle of legal certainty and leaves a wide margin of discretion to judges. On the other hand, it has the advantage of being extremely flexible and allows rapid adaptation to the ever-changing requirements of copyright.

The European system provides at least seemingly, greater legal certainty and reduces the judges' margin of discretionary interpretation. However, it is an inflexible system that cannot be reconciled with the ever-changing Copyright requirements in the digital world. Indeed, we must not forget that an overly restrictive application of copyright rules risks 'freezing' innovation and creativity instead of promoting them.

Registering Copyright and IP

While copyright protection is granted automatically upon the creation of an original work, registering copyright with relevant intellectual property offices can provide additional benefits. Registration creates a public record of copyright ownership, which can be useful in establishing proof of ownership in case of disputes. Additionally, registered copyrights may be eligible for statutory damages and attorney's fees in the event of copyright infringement.

In addition to copyright registration, designers and brands may also consider registering trademarks for their brand names, logos, and other distinctive symbols. Trademark registration provides legal protection against unauthorized use or imitation, safeguarding brand identity and reputation. Similarly, obtaining patents can protect innovative designs or inventions, granting exclusive rights for a limited period.

Designers and brands have to deeply understand the legal framework and requirements for copyright, trademark, and patent registrations in their respective jurisdictions. Consulting with legal professionals specialized in intellectual property law can ensure compliance with applicable laws and maximize the protection of creative works and brand assets.

By adhering to international intellectual property laws, understanding copyright and fair use provisions, and considering registration options, stakeholders in the fashion and design industry can effectively manage the legal framework for copyright and IP protection. This knowledge forms the basis for implementing best practices and strategies in managing copyright and intellectual property in the context of co-design and co-development methodologies.

6.5. *The main forms of intellectual property relevant to the fashion industry and to protect properly intellectual property's rights.*

As said above, each country has its own laws to protect copyright and intellectual property.

However, we will now see an overview of the main forms of intellectual property relevant to the fashion industry and some ways to protect one's rights through these instruments.

Industrial design

Industrial design refers to the shape and aesthetic features of a product. Therefore, industrial design's registration aims to protect the unique appearance of a product rather than its composition or functioning. In other words, the industrial design may protect the shape, configuration, pattern or ornamentation of the product. As with a patent, the design must be new or original to be registered; it cannot have been presented before.

The proper registration of an industrial design can help to prevent or stop competitors from creating a direct copy of your unique design because the right confers an exclusive design right. The registration of an industrial design may also help to establish the ownership rights and thus give you the right to prevent others from manufacturing, importing, selling or hiring articles that incorporate the registered design or a substantially similar design.

Trademarks

A trademark is a combination of letters, words, phrases, sounds, symbols, or designs that identify and distinguish one company's goods or services from another. Trademarks can help to establish a brand, build recognition and represent the reputation of the holder. Trademarks can take many forms and companies often register names, logos and slogans.

Some trademarks may also be appellations or quality assurance marks, used as a certification mark to show that certain products meet a defined standard. For example, the Woolmark design on clothing labels certifies that the products are made with 100% pure new wool. The company holding the mark acts as a quality assurance body to ensure that companies to whom the mark is licensed meet and uphold its certification requirements.

A registered trademark may prevent others from using the same name or logo or one that is confusingly similar to the trade mark that has already been registered.

Each international filing jurisdiction sets out its own specified period of time under which the holder has an exclusive right of use, and each country you wish to protect your trademark requires its own registration. However, many countries are aligned by treaty under the Madrid Protocol, allowing you to make multiple registrations through a centralized process, which can be much more effective than making individual registrations, depending on your IP strategy.

During brand's creation process, it is very important to carry out a comprehensive trademark search in key jurisdictions to determine whether a proposed branding strategy infringes on a third party's existing trademark. To avoid wasting valuable resources, it is recommended to consider undertaking this type of review early in the brand development process.

While it may be frustrating to have to change a brand, it can be far much worse to be forced to do this later when the holder of an existing trademark exerts their rights.

Copyright

Copyright is the exclusive legal right to produce, reproduce, publish, or perform an original literary or artistic work. A copyright does not need to be registered in order to receive protection, as the protection is granted

automatically upon the creation of the work. However, practically speaking, registration of copyright creates a rebuttable presumption of ownership and can be useful to have if you end up in a dispute over ownership.

The only requirement for a work to qualify for copyright protection is that it must be an expression of the author's personality, the result of his free and creative choices. The level of originality required to claim copyright protection is very low.

Patents

A patent may be granted for an invention, such as a particular product or process, which is both new and useful, and may include new and useful improvements on existing state of art. Once an invention has been patented, the inventor (or other rights-holder) is granted the right to prevent others from using or selling the invention for 20 years. This exclusive grant is made in exchange for you (the inventor) publishing the details of the invention. Qualifying as something "new and useful" is a key aspect of a patentable invention.

Patents are routinely granted for different new inventions within the fashion industry. For example, patents have been issued for the invention of technical fabrics, fabrics made from renewable sources or in renewable ways, as well as the process by which certain fabrics are woven. Patents have also been issued for items ranging from waterproof gloves and a new way to construct a sleeve, to insect-repellent fabric and a process for stripping colour from dyed wool.

Like trademarks, patents are enforceable only in the jurisdictions in which they are awarded, so planning around key jurisdictions and treaty-based linking of patent applications is crucial.

Since patents are publicly available and include details of the product construction or manufacturing process, it must be assessed whether a patent may actually offer the best protection or whether the intellectual property may be better protected as a trade secret.

Trade secrets

A trade secret is any piece of business information that has commercial value based on its secrecy. There is no formal method for registering trade secrets, and the protection lasts as long as the secret is kept a secret or otherwise properly protected through enforceable confidentiality obligations, though certain jurisdictions do have laws pertaining specifically to trade secrets.

6.6. *Case Studies: Successful Copyright and IP Management in Co-design and Co-development*

Nike and Apple for Nike+iPod

In 2006, Nike and Apple collaborated to create a new line of sneakers with wireless technology. The sneakers, called Nike+iPod, were equipped with a sensor that was inserted into the shoes and that recorded running data, such as distance, speed, and time. The data could then be displayed on the user's iPod or on a Nike website.

The collaboration between Nike and Apple was a commercial success, with the Nike+iPod sneakers selling millions of products. The collaboration was also a success from the copyright management point of view. Both companies protected their copyrights, but they also worked together to ensure that the rights of both companies were respected.

For example, Nike protected the design of the shoes with a patent, while Apple protected the software used in the shoes with copyright. Both companies also signed an agreement that specified the rights and obligations of each company in relation to the collaboration.

The collaboration between Nike and Apple is an example of how companies can work together to protect their copyrights and create innovative products that are successful in the market.

Adidas e Pharrell Williams.

Over the years, renowned musician, record producer and designer Pharrell Williams worked closely with Adidas to create several trainer and apparel collections under the 'Adidas Originals by Pharrell Williams' brand. The partnership between Pharrell and Adidas began in 2014 and resulted in several product lines, each characterized by bright colours, unique graphics and positive messages.

A particularly well-known example is the 'Adidas Originals x Pharrell Williams Hu NMD' collection launched in 2016. The shoes in this line featured colourful fabrics and lettering with messages of unity and harmony among the people of the world. The collection attracted a lot of interest and was a big hit among fashionistas and sneakerheads alike.

With regard to copyright's management and intellectual property's protection, both Adidas and Pharrell Williams took appropriate measures to ensure that their designs and distinctive messages were adequately protected. They registered copyrights and trademarks for creative works and employed a legal team to monitor the presence of counterfeit products on the market.

In addition, the focus was also on transparent communication about the partnership and the origin of the products, to ensure that consumers were aware of the authenticity of the products purchased.

The partnership between Adidas and Pharrell Williams demonstrated how a well-managed creative collaboration can lead to successful sales and increased visibility of the brands involved. This case highlights the importance of careful management of copyright and authors' rights in the co-design and co-development of products in the fashion and design industry.

Fashion Brands and Collaborations with Influencers

Fashion brands have increasingly engaged in collaborations with influencers, who are social media personalities with a significant following. These collaborations often involve co-designing and co-developing collections or products that reflect the influencer's style and brand image. To manage copyright and intellectual property in these collaborations, fashion brands typically establish clear agreements that address copyright ownership and exploitation rights. While the influencer brings their personal brand and creativity to the collaboration, the brand ensures that their trademarks, logos, and overall brand identity are protected. This requires careful consideration and negotiation to determine the rights and responsibilities of each party, resulting in successful collaborations that protect the intellectual property of both the brand and the influencer.

Conclusion

These case studies demonstrate that when copyright ownership, exploitation rights, and confidentiality are well-defined and protected, collaborations can flourish, resulting in innovative and successful products while safeguarding the interests of all parties involved.

6.7. Conclusion

Effective copyright and intellectual property management is essential in the fashion and design industry, particularly in the context of co-design and co-development methodologies. Collaborative processes bring forth new challenges that require careful attention and strategies to protect the rights of creators, brands, and other stakeholders.

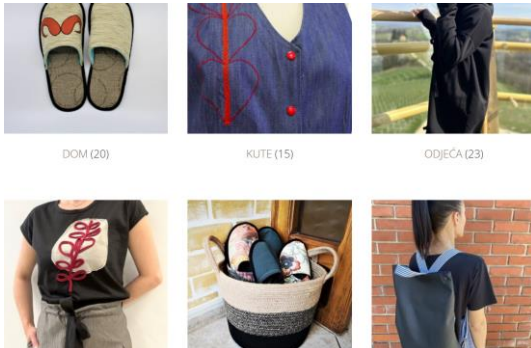
By understanding the legal framework, establishing clear ownership and exploitation rights, implementing non-disclosure agreements, maintaining documentation, and fostering regular communication, stakeholders can navigate the complexities of copyright and intellectual property in collaborative projects. Additionally, adherence to industry standards and guidelines and participation in intellectual property awareness campaigns contribute to an environment of respect for intellectual property rights.

Case studies of successful copyright and IP management in collaborations with designers and influencers highlight the importance of clear collaboration agreements, documentation, and protection of trademarks and brand identity. These examples demonstrate that when copyright ownership, exploitation rights, and confidentiality are appropriately managed, collaborations can thrive while protecting the interests of all parties involved.

In conclusion, by adopting best practices, adhering to legal requirements, and promoting ethical collaboration, stakeholders in the fashion and design industry can effectively manage copyright and intellectual property in the evolving landscape of co-design and co-development, ensuring the protection of their creative works and sustaining a vibrant and innovative industry.

7. Case Studies

7.1. Humana Nova



<https://youtu.be/HyUYNN46xjM>

Summary

Social cooperative Humana Nova is a social enterprise that operates in 3 areas: environmental, social, and economic. They employ persons with disabilities and other socially excluded persons. The team consists of 45 employees, 26 persons are disabled, and 12 are members of other marginalized groups. They collect textiles that people bring directly to Humana Nova, and leave in one of their containers or in the recycling yards of local utility companies they cooperate with. The wearable part of the collected clothing textiles is put up for sale in a second-hand store (RE-USE) where its life is extended. From unusable textiles, cotton is separate. After it is cut into industrial rags and re-marketed for the industrial sector, as well as raw material for making recycled products. The textile that remains after that separation is processed in cooperation with Regeneration non-wovens, where it goes into the grinding process, i.e., recycling. In organizing textile waste collection campaigns, they cooperate with schools, associations, and local authorities that show interest and desire to make a difference. They hold creative workshops on textile recycling in educational institutions, kindergartens, and if desired, other institutions.

What it is about this initiative that would be of particular interest to our target audience?

Innovative Business Model - Humana Nova Social Cooperative is a social enterprise that provides answers to 3 pressing problems of today's society: Integration of socially marginalized groups into society: employing people with disabilities and other social groups. Another is disposing of textile surpluses and caring for the planet, disposing of textile surpluses by recycling or reusing them through second-hand or redesigning, and Investing profit in further development and survival. Invest profit in preserving jobs, creating new ones, and further development; we invest in employees and in business expansion, i.e. in the well-being of the community.

Detailed information

1. Background and objectives – challenge addressed

Social cooperative Humana Nova was founded in 2011 as part of the ESCO project - "education for social cooperatives - new opportunities for people with disabilities" implemented by the Autonomous Center - ACT (now ACT Group). The main goal of the project was to increase employment opportunities for people with disabilities in Međimurje County, promote social integration, and raise the level of awareness about employment opportunities for people with disabilities by developing sustainable models at the local and national levels. After the completion of the project, Social Cooperative Humana Nova started its work. Since its founding in 2011, the Cooperative has continuously recorded an increase in employees (mainly PWDs and/or other people from socially marginalized groups) and an increase in income and the number of businesses collaborates (customers and suppliers).

2. Starting point and duration

-

3. Geographical scope and coverage

Humana Nova is located in the North of Croatia, Medjimurje County. The tailor shop and sewing room in Čakovec are together a space where quality and innovative products are created. Products made of new materials are sewn from locally procured or ecologically certified materials from other countries, always respecting the rules of fair trade. This is how quality products for the business sector and clothes for the web shop are created. Other products from the web shop are a combination of products made from recycled and new materials. Coverage is the Europe. All the felt they produce is exported to EU countries, but they also export new products they sew, about 10%.

4. Partnership (Lead partner and other partners involved)

Collaborations have been achieved on the local, national and international markets, and some of the more famous collaborators are definitely Ikea, Dechatlon, Erste Banka, Elfs, Dubioza Kolektiv, Belupo, Phillip Morris Zagreb, A1, and others.

5. Funding resources

Humana Nova operates on the market on an equal footing with other legal entities, it does not have the right to participate in tenders that associations have, just as we do not have the right or possibility for local or national (co)financing. However, what is important to highlight is that the cooperative provides a unique legislative framework for the involvement of workers in management, which is reflected in motivation and results.

6. Target groups, stakeholders and beneficiaries

For the business sector, they offer textile solutions according to the company's requirements and needs. They offer creative workshops on textile recycling to schools, kindergartens, and, if desired, to other institutions, and through the web shop, the products are intended for all interested customers.

7. Methodological approach. How is this initiative working/implemented?

There are no standards in the production processes, which encourages the personal responsibility of each worker to their workplace and work process. Working conditions greatly affect the satisfaction of our people, who perform their work correctly, without stress and pressure. Workers are involved in management, shared values such as tolerance, respect, and togetherness are nurtured, and they take care of the organizational culture and contribute to satisfaction and motivation. As a non-profit and socially responsible company, they invest all their profits in preserving jobs, creating new ones, and further developing and expanding their business, that is, in the well-being of the community. Humana Nova is a leading example of a social enterprise for work integration and reuse.

Validation and lessons learned

8. Success factors. Why is this initiative considered as a "good practice"? Please provide evidence with results / measurable outputs

Since the founding of Humana Nova in 2011, they have managed to collect more than 2,000 tons of textiles. They currently employ 45 workers, 26 of whom are disabled, and 12 from other socially marginalized groups whose challenges today's society does not have a high-quality response to. They are members of the RREUSE network, an umbrella non-profit network that brings together social enterprises active in the field of reuse, recycling, or repairs.

They are holders of ISO 26000 and ISO 14001 certificates and members of the Croatian eCommerce Association. In 2011, ACT Grupa won the Award for Social Entrepreneurship with social enterprises, among which was Social Cooperative Humana Nova. They are also the winners of the Key Difference award for 2012 in the category of equality of persons with disabilities. In 2022, Humana Nova became the holder of the Premium green certificate. Tens of thousands of textile products are produced annually from the sewing room in Čakovec for business clients, but also for the web shop. More than 1,500 teachers in

Croatian kindergartens wear their uniforms, which are carefully tailored and designed based on feedback. They have achieved numerous local, national and international collaborations of which we are extremely proud.

9. *Potential of replicability and/or up-scaling. Please explain if, why, and how this good practice can be transferred to other areas and adopted by more organizations. What are its innovative and sustainable elements?*

As already mentioned above, they make new quality and innovative products from discarded textile items, and sustainable products from new materials. In Humana Nova, the members of the cooperative are associations and individuals who have recognized the value of the initiative and the potential of including people with disabilities and other socially excluded groups in the production of quality and sought-after products. Members are the workers themselves, those who want it, and all cooperative members are ready to help the start-up, work, and development of the cooperative, as well as the local community, with their engagement, work, and financial contributions. Their primary goal is social impact. As a social cooperative, they are guided by both social and commercial goals, and we manage together, guided by cooperative principles. The way employees are involved in the cooperative and the way they approach solving social and environmental problems is innovative and sustainable. Also, partnership with large companies, Ikeas, Dechatlon, Belupo guarantees sustainability.

Contact details

Organisation – Humana Nova

Website - <https://humananova.org/>

Email - info@humananova.org

7.2. *Institut održive mode – Institute of sustainable fashion*



Summary:

The Institute of Sustainable Fashion, IOM, aims to produce, educate and spread the idea of sustainable fashion. At the core of the activity is transparency, honesty and the belief that sustainability is a path that we create together. The founder believes that if fashion strives towards sustainability, it will have to abandon the model of mass production of fast fashion. Fashion will have to slow down, find a way to balance growth and sustainability, because the essence of the problem is clear - we need to produce and consume less. The founder naturally dyes the materials with avocado seeds, nettle powder, organic green tea, seasonal fruits and herbs from Podravina. When painting, use only salt and vinegar. The process is very simple, you need herbs, material, water and salt and a lot of patience. The founder uses GOTS certified cotton, produced in Germany in an IVN-Best certified facility that has organic cotton factories in Uganda and Kyrgyzstan. Factories are certified in the entire production chain, from raw materials, dyeing, weaving to stores. This guarantees a sustainable, ecological and ethical approach to production at every step. Cotton is combined with organic linen and hemp in certain garments.

What it is about this initiative that would be of particular interest to our target audience?

Technology Application.

Flax, hemp and cotton for upcycling are procured in Podravina (part of Croatia), organic cotton in Germany, nettle in Finland and Piñatex in Spain. The production of items is sustainable, responsible, everything is handmade, with minimal waste, without toxins and plastic. Locally, it uses hundred-year-old hemp and flax from Podravina, these are naturally grown and woven materials from the last century. The materials are naturally dyed with avocado seeds, nettle powder, organic green tea, seasonal fruits and herbs from Podravina. When painting, only salt and vinegar are used.

Detailed information*1. Background and objectives – challenge addressed*

The Sustainable Fashion Institute, IOM, was founded in October 2020 with the aim of producing, educating and spreading the idea of sustainable fashion. At the core of the activity is transparency, honesty and the belief that sustainability is a path that we create together. The founder and head of IOM is Ivana Biočina, master's degree in textile technology and engineering (majoring in design and engineering), researcher and author of several books on fashion and the textile industry. The purpose and intention are to empower women, as well as all consumers, to be part of the change we want to see in fashion, decoration, production and the world together. That sustainability is not just a passing thought, but the beginning and foundation of a new life that emerges, sprouts, germinates, who is just being born; to learn, to build and to say clearly - our strength should be encompassed and directed towards glorification, encouragement and creation.

2. Starting point and duration

The Sustainable Fashion Institute, IOM, was founded in October 2020 with the aim of producing, educating and spreading the idea of sustainable fashion

Geographical scope and coverage

The geographical scope is Croatia and beyond since Institute is selling its products all over the world.

3. Partnership (Lead partner and other partners involved)

-

4. Funding resources

Institute of sustainable fashion is a craft, led by owner Ivana Biočina.

5. Target groups, stakeholders and beneficiaries

The target group is all customers who think about sustainability, manufacturers and educational institution that deals with fashion.

6. Methodological approach. How is this initiative working / implemented?

There are no collections in IOM, no seasonal access. Everything is done in small batches and I can say that the first batch is already sold out. The working model is fluid and founder try to listen to the needs of local women, to find a good balance of production, quality content, and spreading the idea of sustainability.

Validation and lessons learned*7. Success factors. Why is this initiative considered as a “good practice”? Please provide evidence with results / measurable outputs*

Institute's founder has a master's degree, an engineer in textile technology and engineering (majoring in design and planning), she is a researcher and the author of several books on fashion and the textile industry. The goal of the institute is the production, education, and dissemination of ideas of sustainable fashion. Her pieces are timeless, which in a way is the goal of sustainable fashion, so she does not have a seasonal collection, but practices circularity and a zero-waste philosophy regarding textile waste, and tries to be better with each series. She uses nettle (*Urtica Dionica*) in combination with organic Turkish cotton

and Finnish hemp. Certified cotton, certified cotton, linen, naturally dyed materials, organic rubber and thread, pinatex. <https://www.novilist.hr/life/moda/ivana-biocina-osnovala-je-institut-odrzive-mode/>
<https://green.hr/institut-odrzive-mode-nije-samo-novi-brend-nego-je-i-pokret/>

8. *Potential of replicability and/or up-scaling. Please explain it, why and how this good practice can be transferred to other areas and adopted by more organisations. What are its innovative and sustainable elements?*

Sustainability and the change of generations (Generation Z is becoming the largest global consumer group) are deeply connected, and we can thank the younger generations for the changes we see. Fashion as we know it is not sustainable and changes are necessary, but in addition to the challenges, this completely new way of thinking about fashion also presents huge opportunities - fashion and the industry are certainly taking on a new face and meaning. As the founder says, "Changes that are necessary in fashion and in the whole world cannot come from large manufacturers because they are too big and too slow. As always, changes come from below, from smaller and medium-sized producers".

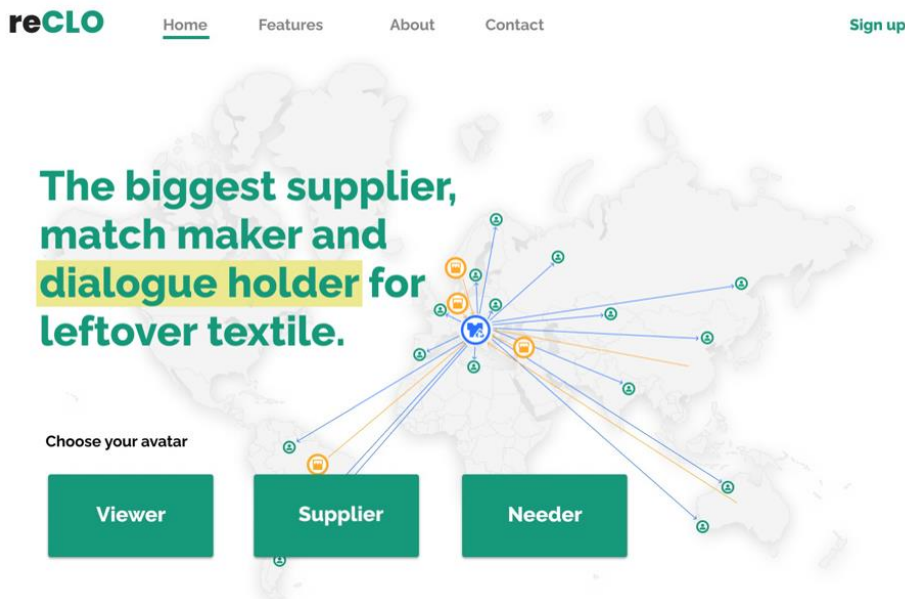
Contact details

Organisation: Institute of sustainable fashion

Website https://institutodrzivemode.hr/#page_id=2#

Email ivanabiocina@gmail.com

7.3. *Project ReCLO – Revolutionizing the textile supply chain through the Internet of Textiles platform.*



reCLO Home Features About Contact Sign up

The biggest supplier, match maker and dialogue holder for leftover textile.

Choose your avatar

Viewer Supplier Needer

Summary:

Project ReCLO is an Industry 4.0 greentech startup from Croatia aiming to optimize, meaning – to reduce, the percentage of discarded and waste textiles in the textile industry by increasing the rate of exchange of secondary raw material surpluses and/or leftovers between all the supply chain stakeholders - producers/factories/ brands/ waste handlers, recycling facilities and individuals. The goal of the project is to open up the market of pre- and postproduction waste and leftover materials to the public for collaboration, matchmaking, and environmental auditing, all in order for customers to engage more with slow-fashion, and for brands to raise their green transition awareness, in a way of fostering the customer's input. Established, the protocol results in cheaper and more traceable products for society, better alignment with the EU Green

Deal initiative for the manufacturing facilities, more responsible and efficient production, and of course a decreased carbon, plastic, and water-usage footprint for the entire planet.

What it is about this initiative that would be of particular interest to our target audience?

Innovative Business Model, Technology Application, Copyright and IPR, Sustainable Pattern

ReCLO provides a digital platform (Technology application) that serves as hub for managing textile waste in the fashion industry addressing pre - and postproduction waste and leftover materials to the public for collaboration, matchmaking, and environmental auditing (Business model). The technology behind the idea is not complicated to replicate and applicability (Sustainable Pattern) has already been proved by the interest from the industry partners to take part in the project. It saves the in-house margin of textile companies from having to spend resources on discarding the material. It also brings the innovation of switching the supply-and-demand roles between different stakeholders.

Detailed information

1. Background and objectives

ReCLO is a project focused on sustainable fashion and circular economy solutions. They aim to tackle the issue of textile waste in the fashion industry by providing a digital platform that facilitates the recycling and upcycling of textile waste. ReCLO works with fashion brands, retailers, and textile manufacturers to optimize their supply chains and reduce waste. Their platform enables the tracking and tracing of textile waste, facilitating its redirection to recycling or upcycling processes instead of ending up in landfills. By creating a closed-loop system, they aim to minimize the environmental impact of the fashion industry and promote a more sustainable approach to production and consumption.

2. Starting point and duration

The project ReCLO started in the second half of 2022. Its duration is about a year and a half now.

3. Geographical scope and coverage

The project ReCLO's geographical scope is currently the Balkans.

4. Partnership (Lead partner and other partners involved)

Industry partners from Croatia include: Adidas, Naftalina, Prostorija, Kotka, Varteks. Collaboration with the City's municipal waste department and the University of Zagreb have also informally been established. Some of the local fashion designers include: Kramah, TinaVR, Broth, Kookabee, (...)

5. Funding resources

Private funding, EU funding, INCO funding, grants

6. Target groups, stakeholders and beneficiaries

Fashion brands, retailers, textile manufacturers, waste management and recycling companies, NGOs, Consumers (Society as a whole)

7. Methodological approach. How is this initiative working / implemented?

ReCLO provides a digital platform that serves as hub for managing textile waste in the fashion industry. ReCLO collaborates with fashion brands, retailers, manufacturers, waste management companies, and sustainability organizations. By fostering partnerships, they create a network that supports the circular economy and sustainable practices in the fashion industry.

Validation and lessons learned

8. Success factors. Why is this initiative considered as a "good practice"? Please provide evidence with results / measurable outputs.

Since the inception of measurement, the startup has so far reduced the industry's water consumption by 540 000 L, prevented 4 tonnes of microplastics from entering our oceans, and prevented 10 000 metric tons of

CO2 from entering our atmosphere. The team had collaborated with four of Croatia's biggest textile companies to repurpose their textile waste materials, and interest is on the rise. The project gained a lot of recognition and received many awards in the past two years; two Social Impact Awards, an Erasmus Solidarity Corps Grant won three. Finished second in 4 other national and regional greentech and industry 4.0 competitions, one of them being from the Chamber of Economics, one from the city of Zagreb and another from the Croatian Academic Association. The project also won silver on EIT Manufacturing Challenge.

9. *Potential of replicability and/or up-scaling. Please explain if, why and how this good practice can be transferred to other areas and adopted by more organisations. What are its innovative and sustainable elements?*

The technology behind the idea is not at all complicated to replicate, and also currently very present on the market, it just needed some extra effort of putting it all together to set it in motion. Applicability has already been proven by the interest from the industry partners to take part in the project, and can easily be adopted by new organizations because of the software's entrepreneurial and co-creative business model of users creating their own content on the platform. Financially, it's sustainable since it saves the in-house margin of textile companies from having to spend resources on discarding the material. It also brings the innovation of switching the supply-and-demand roles between different stakeholders. The project is scalable because of the open-source technology behind it and its mindfulness about open-data manufacturing.

Contact details

Organisation: Alavera udruga za dizajn i redizajn, Zagreb

Website: www.alavera.hr

Email: alavera@alavera.hr, niko.bucalo@fer.hr

7.4. Athos Pallas



Summary:

Athos Pallas is a European sustainable fashion & textile agency, focused on innovative services and sustainable practices, that is located in Thessaloniki, Greece. Over 40 years of experience, research, and development, have helped the company build a strong organization, offering sustainable solutions for its brand. Its Product Range covers women's, men and kids' fashion in jersey, woven, woven mix and knitwear. Athos Pallas is enhanced by an exclusive production chain, making sure that quality is maintained at every step of manufacturing. The services offered, include:

- Private Label,
Research, inspiration, forecasting according to the client's brand identity, designs and knowledge, helping with true branding ideas in competitive European prices.
- Sourcing,
Its sourcing experts, who often travel to international destinations and fashion centres, developed a keen eye on trends. They may assist with their recommendations on fabrics and accessories

including trims, zippers, buttons etc., analysing and providing the best solutions according to one's needs.

- Quality Control,
Internal Quality Control team by performing on-site assessments, ensure the client's products meet the quality standards and expectations, plus lead-times.

What it is about this initiative that would be of particular interest to our target audience?

Athos Pallas invested in technology and managed to trace a product as it moves through processes. It has created an open and transparent community of suppliers, retailers, and end consumers where all can feel confident of the garments' journey.

A human centred approach lies among its key objectives, having established a 'person to person' policy, according to which, sharing information, such as "Who, Where/When and How products are made" is a priority.

Over the last year, Athos Pallas collaborated with BASF and they are now proudly offering a Greek, Premium Sustainable and Traceable cotton issued by ATHOS PALLAS & BASF.

Detailed information

1. Background and objectives

Athos Pallas was founded in 1982 as a clothing manufacturer. A company that was mainly exports oriented and enjoyed financial growth. However, when the painful adventure of the financial crisis began in 2008, it found the sector in a difficult situation. The company had to rethink its business model and proceed with further development. At that time, Athos Pallas begun to offer its know-how and tailor-made services to other F&D professionals and clothing companies. Over the past years, based on its experience and the global trends, Athos Pallas envisioned a more sustainable world and managed to collaborate with "Thrakika Ekkokkistiria S.A.", producing 100% Greek clothing from the cotton seed to the finished garment, certified in all production phases by an independent body for both quality and sustainable practices.

2. Starting point and duration

In collaboration with "Thrakika Ekkokkistiria S.A." and "BASF", the flagship of their programs is CSF (Certified Sustainable Fibermax) which they have implemented since the beginning of this initiative, in 2015, it is currently widely known in the cotton market and they have customers abroad who ask to supply this particular certified cotton every year.

3. Geographical scope and coverage

Apart from its significant presence in the Greek market, it should be noted that Athos Pallas exports its products to 10 European countries, including Great Britain and Germany.

4. Partnership (Lead partner and other partners involved)

The company is privately owned and is being operated by a small team of people. Partnerships play a vital role for Athos Pallas, leading to a partnership-based business modelling and seen as an opportunity in the context of globalisation, exploiting risk reduction potential and sharing resources, benefiting from technological convergence and industrial deconstruction. Key partners are "Thrakika Ekkokkistiria S.A." counting 50 years of experience in ginning plants and "BASF" counting more than 70 years in the Greek market.

5. Funding resources

Athos Pallas is a private owned company, whose resources come from the sales of its products.

6. Target groups, stakeholders and beneficiaries

Athos Pallas cooperates with two key partners, "Thrakika Ekkokkistiria S.A" and "BASF" for the production of Cotton+ (a cotton of increased value, the surplus value of which returns to the producer. Its premium value

had to do both with quality and with the certification that it was produced with sustainable agricultural practices). In addition, tech experts have teamed up with Athos Pallas, to secure traceability by applying blockchain technology to the whole production and retail process. Among the target audience of the company are fashion designers, textile producers, clothing manufacturers, while also cotton farmers are included among its beneficiaries.

7. Methodological approach. How is this initiative working / implemented?

Teaming up with other companies having the same values and principles, especially those relating to sustainability. Sustainability starts in the farming sector, applying principles of the LCA framework defined by the ISO 14040 and the ISO 14044 standards. The process is certified in all production phases by an independent body for both quality and sustainability practices. There is 100% traceability recorded and proven by a unique QR code and blockchain technology. All parties involved, from the cotton growers to the garment packaging process, are located within a 250 km radius, minimizing transport costs and environmental footprint. There is a register of producers who participate in the certification scheme that includes producers' names, id, tax numbers, contact details, field details; a process that prevents adulteration of end cotton bales.

Validation and lessons learned

8. Success factors. Why is this initiative considered as a "good practice"?

Athos Pallas has a genuine passion for fashion. Innovative systems support its business model. By traveling all around the world Athos Pallas' people have gained inspiration, experience, and knowledge that made them achieve a valued place in the global market. Behind its success story, there are committed and dedicated teams, with a great knowledge of the latest technology, to ensure quality productions, at competitive prices and fast deliveries. All products and services are strongly committed to full compliance with global human rights and ethical standards. It has and will always be Athos Pallas top priority to provide the highest quality to its customers. The company strongly believes that reliability, quality, and flexibility are the most important elements of its competitive edge.

9. Potential of replicability and/or up-scaling.

This good practice can be transferred to other areas both in Greece and Europe, that produce cotton and could benefit from the technological advancements that Athos Pallas has already implemented using blockchain, through which it creates clothes with "identity". Athos Pallas has contacted well-known retailers in fashion & design sector, such as Assos, Zara and Marks & Spencer to promote cotton, applying innovative and sustainable elements, through a code (QR code) on the garment, informing end users and customers about the farmer, the gin, the dyer, and even about the employee who folded the garment.

Contact details

Athos Pallas

Website: <https://www.athospallas.gr/>

Email: info@athospallas.gr

7.5. Re-lak

Summary:



Relak Tech Jewelry is a company based in Thessaloniki, which combines traditional crafts artistry with the reuse of high-tech equipment (PC parts). The philosophy is to offer these materials a second “elegant” life so that they continue to lamprey our daily lives instead of oppressing the environment.

What it is about this initiative that would be of particular interest to our target audience?

Relak is a sustainability-focused company aiming to save and protect the environment. It is part of the “iSea”, the Environmental Organisation for the Preservation of the Aquatic Ecosystems in Greece, whose objectives are helping make the world a better, and greener, place.

Detailed information

1. Background and objectives

Relak Tech Jewelry started operating in 2012. It is oriented mainly to B2B sales, placing its products to specific stores, that somehow are of special interest and are related to technology (e.g., Noesis Science Center & Technology Museum) and the environment, such as the “iSea” Organisation and the “ARCHELON” - “The Sea Turtle Protection Society of Greece”, which is a non-profit association with the aim of studying and protecting sea turtles and their habitats.

2. Starting point and duration

The idea of “tech” jewelry came about incidentally, “like most things in life”, as their creator Mrs. Lizetta Fotoglou and the Relak team say. Pieces of computer motherboards have been transformed into rings, earrings, key chains, and even collectible coasters (from a 90s display board), thanks to the ingenuity and love of a computer geek. Relac means reusing and giving a second life to items that would end up at best in recycling and at worst in landfill. The collection includes earrings, rings, key rings, cufflinks and occasional collectibles such as necklaces, coasters, pins, bracelets depending on the materials and the various tech accessories that end up to Relak. For more than ten years, Relak has managed to promote recycling and circular economy in Greece. The owner of Relak is actively involved in projects and associations, like the Zero Waste Lab, the first recycling and circular economy center in Greece, and the Environmental Management Office at the University of Macedonia.

3. Geographical scope and coverage

Relak Tech Jewelry was made known primarily outside Greece. The company exports its products to European countries, mainly in Germany, France, Cyprus, Sweden, even in the United Kingdom, while its presence in Greece is limited.

4. Partnership (Lead partner and other partners involved)

Due to the owner’s professional involvement in IT sector, there was a first sufficient stock of computers that were spidering abandoned over the years but from then on, the Relak team created a mini network of acquaintances, friends and professionals in the field who are still key partners. Moreover, associations and NGOs previously mentioned play also a significant role helping Relak achieve its objectives.

5. Funding resources

Relak Tech Jewelry is a private owned company, whose resources come from the sales of its products, and possibly from the services that the owner offers to its partners

6. *Target groups, stakeholders and beneficiaries*

The target audience and all of its stakeholders are companies and consumers with an ecological sensitivity. The companies buying from Relak are galleries and shops that promote recycling, reuse and support creators who "marry" tradition and something modern.

7. *Methodological approach. How is this initiative working / implemented?*

Teaming up with other companies and/or organizations having the same values and principles, especially those relating to sustainability lies among Relak's priorities. Research phase and manufacturing phase of this jewelry is carried out with explicit care, respect, and love for the environment. Every single item is hand crafted, inspired mainly by nature. In addition, the packaging for tech jewels is recyclable and all box cards are made from Venice plankton paper. At the same time, Relak Tech Jewelry's "Water" series (consisting of sharks and fish) is available on the website of the environmental NGO iSea. Thus, with each purchase from this collection, the customer actually contributes to the organization's actions for the protection of sharks.

Validation and lessons learned

8. *Success factors. Why is this initiative considered as a "good practice"?*

Relak Tech Jewelry has a genuine passion for recycling. Starting a corporate recycling program via companies that do not longer need old equipment (PCs, consoles, gaming accessories, etc.) is a smart way to get serious about a sustainable environment making this the ultimate quick win. By adopting such a practice, businesses can not only reduce their environmental footprint, but also enhance their social impact.

9. *Potential of replicability and/or up-scaling.*

This good practice can be transferred to other areas both in Greece and Europe, that are sustainability driven. When it comes to recycling computer parts, one may have a few options. When a company chooses to recycle its e-waste, it is heading to help save the planet from e-waste accumulation. With a growing focus on ESG and carbon emission reporting, and rising consumer consciousness of environmental impacts, sustainability is now more vital than ever before. In terms of upscaling, this practice could be further developed, by offering sustainability consulting services to optimize how much sustainability an organization/company can produce.

Contact details

Relak Tech Jewelry

Website: <https://re-lak.com/>

Email: info@re-lak.com

7.6. *Salty Bag*



Summary

Salty Bag is an upcycling company making bags and travel goods from decommissioned sails. Adding to the unique nature of each bag, the company tracks down and curates the life-story of each sail they use including it in a booklet that comes with each bag.

What it is about this initiative that would be of particular interest to our target audience?

Salty Bag is an innovative award-winning sustainable business that redefines what most people think of as waste by creating handmade premium bags and accessories from recycled discarded and retired sails, kites and parachutes, giving them new life and value. Under the moto “Sails for bags and bags for life”, Salty Bag provides a Sustainable Pattern, being an upcycling company with a Vegan friendly brand, which does not use animal-leather but only source plant-based leathers. Every Salty Bag is designed to be reused or to end up as something else besides trash.

Detailed information

1. Background and objectives – challenge addressed

Sailcloth by its nature is a strong hard-wearing material. Even after reaching its end of life at sea, a sail will retain its strong, long-lasting, weather resistant nature making it perfect for being upcycled into tough, elegant travel bags and accessories that can be enjoyed and cherished for years. This Corfu-based brand saw an opportunity to use reclaimed material in their sturdy, waterproof bags; their bags and luggage are made mainly from old yacht sails. In addition, they use recycled polyester and vegan leather, as well as reclaimed seatbelts and rope. Discarded sails display various states of wear; Salty Bag manages to embrace any stains, creases or other marks on the material, making them part of each bag’s charm and sometimes adding the words “This was once a sail.”

2. Starting point and duration

Conceived during a Corfu Sailing Club seminar in January 2013, Salty Bag was founded to design and create ultra-low impact, handcrafted, upcycled, hard wearing, circular-economy bags designed to last a lifetime and to be reused at their end-of-life.

3. Geographical scope and coverage

The company makes every attempt to source locally: the leather is chosen from small producers with a long history of careful craftsmanship. The webbing used is from a belt making company in northern Attica that has helped tie down and hold in place everything imaginable for over 80 years. All bags and accessories are designed and handcrafted on the island of Corfu in the Ionian Sea. Salty Bag has 46 store locations in 7 countries around the globe.

4. Partnership

The company has two founding members and is being operated by a small team of people.

5. Funding resources

Salty Bag is a private company, whose income comes from the sales of its products.

6. Target groups, stakeholders and beneficiaries

Salty Bag’s products (backpacks, shoulder bags, small bags, navy holdalls, clutches, accessories) address people that value “handcrafted elegance”, as the essence of handcrafting – and thus the essence of Salty Bag – is masterfully combining the elements of craftsmanship, premium materials and investing in the time needed to create something unique. Moreover, the company has partners in re-use that include sailing and yachting companies, clubs and races.

7. Methodological approach

To achieve the desired unique outcome, Salty Bag combines Upcycling, an unflappable focus on the best and strongest materials, and incorporating reusability into every design it makes.

Each sail that is collected is carefully upcycled to continue its journey as a Salty Bag. All other materials that are used in the construction of the bags, from the lining to the straps and even the thread, are also

responsibly chosen from sustainable sources. Adding to the unique nature of each bag, the company tracks down and curates the life-story of each sail they use, including it in a booklet that comes with every bag. Each of them is named by a unique place in Greece.

Reusability by design & Upcycling of Salty Bag

The bags are designed and made to be reusable. Salty Bag reuses Salty Bag. The customers can return a Salty Bag for it to be reused and the company will put it aside and make sure to turn it into a new Salty Bag. Whenever a Salty Bag is returned for reuse, material waste is reduced and the customer receives a 30% discount on the next purchase from the company's website.

The materials

Every Salty Bag is a unique piece. There are differences in texture, colour, stitching and aging, depending on how hard and how often each sail was used. Salty Bags may come with stains, abrasions, scrapings, creases or marks. These form the traces of each Salty Bag's unique story.

"Upcycle your Sail"

Salty Bag has a Sail Upcycling programme that offers the following:

- 1 free "Reborn from the Sea" Salty Bag for every 30 square meters of usable material
- A discount coupon worth 25% off purchases from the company's site for up to a year
- A Sail Reuse Certificate attesting to how many square meters of sail were saved from the landfill!

Validation and lessons learned

8. Success factors

Salty Bag, based in Corfu, won an award in the Bravo Sustainability Awards 2019 Marketing Axis.

Furthermore, Salty Bag is a live example of a company with social impact. True to its philosophy of corporate social responsibility and inspired by the work and the vision of the environmental organisation World Wide Fund for Nature (WWF Greece), Salty Bag created the collection "Salty Bag x WWF", while at the same time, it innovates once again by giving them names derived from the Latin name of the winds (Boreas, Eurus, Notos, Zephyrus). In order to support the action WWF Greece, the company offers 10% of the purchase of these products as a financial support to WWF.

One other novelty of Salty Bag is that its website is available in Greek and English language, but also in Corfu local dialect!

9. Potential of replicability and/or up-scaling

Salty Bag may be considered as an outstanding example of circular economy by creating fashion through upcycling with respect to the place of origin and by highlighting the history of the reused material. This sustainable business model that stimulates a circular economy to both customers and other stakeholders can and should be replicated by the same or by other sectors as well. Old and discarded sails, kites and parachutes but also seatbelts and ropes can be replaced by any other reusable wasted material in designing new objects that are not limited to bags and fashion accessories.

Contact details

Organisation: Salty Bag

Website: www.saltybag.com/

Email: info@saltybag.com

7.7. YOOX Net-a-Porter Group S.p.A



YOOX
NET-A-PORTER
GROUP

Summary:

YOOX Net-a-Porter Group S.p.A. is an Italian online fashion retailer created on 2015, after the merger between Yoox Group and Net-a-porter Group (NAP). YOOX was originally founded by Federico Marchetti in Milan in 2000, and Net-a-Porter was founded by Natalie Massenet in London in 2000. The Group is today the world's leading lifestyle online store. YOOX Net-a-Porter Group S.p.A. confirms itself as a unique Italian case history that has been able to win the market challenge, to keep in mind for every other project concern fashion, technology, innovation.

YOOX's concept is to buy up overstocked or unsold items from previous seasons in a direct relationship from renowned fashion houses and sell them online at discounted outlet prices.

What it is about this initiative that would be of particular interest to our target audience?

Innovative Business Model

Technology Application

Sustainable Pattern

Detailed information

1. Background and objectives – challenge addressed

YOOX is enable luxury brands to off-load last year's merchandise without undermining their brands or cannibalizing sales at their existing stores. Vintage designer clothing (Chanel, Dior, Gucci, etc.) is also collected and sold at special occasions. Some fashion designers have created capsule collections exclusively for yoox.com.

2. Starting point and duration

YOOX was originally founded as a startup founded in 2000 by Federico Marchetti (Ravenna, 1969). The company initially establishes itself as an online outlet, to which fashion companies lend clothes from their previous collections. Once a high-level team has been built, Marchetti makes his team's skills available to those brands that are not yet agile in the online sales market.

3. Geographical scope and coverage

Today the online stores connect more than 5.3 million customers to the world's most coveted brands and new names of fashion system. Serving 170 countries through a network of offices with operations across the US, Europe, APAC and joint ventures with Alibaba in China and Symphony Investments in the Middle East.

4. Partnership (Lead partner and other partners involved)

In 2015, YOOX purchased NAP shares from Richemont and merged with Net-a-Porter to establish the Yoox-Net-a-Porter Group (YNAP), leading by Federico Marchetti as CEO.

The combined revenues of the two companies prior to the merger was about \$1.4 billion and their websites received a combined 24 million unique visitors annually. The combined network reached about 180 countries. YOOX founder Federico Marchetti became the group's CEO and Net-a-Porter founder Natalie Massenet left the company after the merger was completed.

In May 2018, Richemont acquired the YNAP Group by purchasing 95% of the company's available shares. The combined company has become a global e-commerce player.

In November 2020, Yoox Net-A-Porter announced Geoffroy Lefebvre as its new CEO, effective from January 2021.

In August 2022, the Farfetch group bought 47.5% from Richemont and could rise to 100% by 2028. 3.2% of the online clothing shopping portal was sold to Symphony Global, Mohamed's investment vehicle Alabbar. On 31 October 2022 Geoffroy Lefebvre left his position in favor of Alison Loehnis, new interim CEO. Loehnis will lead the company until the acquisition of Ynap's share capital in Farfetch and Alabbar is completed, expected by the end of 2023, after which a new external executive position will be appointed.

5. *Funding resources*

At the beginning, it wasn't easy for Marchetti to gather trust and investments. In 1999 Elserino Piol, head of venture capital in Italy and founder of the Kiwi management fund, invested six billion lire in this project. Yoox was thus founded on 21 March 2000 and three months later, on 21 June, Yoox.com went online for the first time in Italian and English.

Backed by venture capital firm Balderton Capital, Yoox was founded as a privately held company and achieved total revenues of £18m by 2009. By the end of 2011 it had reached £29m; in 2015, it reported sales of £41m. Following the effectiveness of the merger on 5 October 2016, the newly issued shares of Yoox Net-A-Porter Group – resulting from the transaction itself, as well as the ordinary shares already outstanding at that date, were admitted to listing on the MTA with the new ticker "YNAP" and were included in the FTSE MIB index. The company was delisted in 2018.

In 2018 YNAP officially becomes part of the Richemont Group and joins forces with Alibaba, in order to create optimal services for Chinese customers and the Eastern market.

6. *Target groups, stakeholders and beneficiaries*

The Group is today the world's leading lifestyle online store, serving 170 countries through a network of offices with operations across the US, Europe, APAC and joint ventures with Alibaba in China and Symphony Investments in the Middle East.

7. *Methodological approach. How is this initiative working / implemented?*

Yoox was founded as a privately held company. Following the merger, the newly issued shares of Yoox Net-A-Porter Group were admitted to listing on the MTA with the new ticker "YNAP" and were included in the FTSE MIB index. In 2018 YNAP officially becomes part of the Richemont Group and joins forces with Alibaba, in order to create optimal services for Chinese customers and the Eastern market.

Validation and lessons learned

8. *Success factors. Why is this initiative considered as a "good practice"? Please provide evidence with results / measurable outputs*

The economic, entrepreneurial, managerial and creative power of the Group is supported by a vision linked to the enhancement of sustainable, eco-sustainable and ethical fashion, through various initiatives carried out also in collaboration with the brands that operate within the platform.

Sustainability: YOOX is the first company to publish the annual Sustainability Report and to present YOOXYGEN, the first online shop-in-shop dedicated exclusively to sustainable fashion.

In 2020, the Group launches "Infiniti 2030": the project intends to involve customers to make them active players in the supply chain. The brand's mission is to achieve specific sustainability requirements by 2030 such as: circular economy, circular culture, attention to the planet, positive thinking.

Technology: In 2010 the interport of Bologna, one of the main headquarters of the group, became the first fully automated logistics point, thanks to technologies for product logistics management. In 2020, with the University of Modena and Reggio Emilia (Unimore) the Yoox Net-a-porter group created a laboratory dedicated to artificial intelligence and "computer vision" applied in the fashion field.

Training: Since 2020 Yoox has undertaken the project with Vogue Italia - entitled Vogue YOOX Challenge - The Future of Responsible Fashion - to support designers, creatives and startups from all over the world who have decided to invest in a responsible approach through innovative projects and sustainable products of fashion and design.

9. *Potential of replicability and/or up-scaling. Please explain if, why and how this good practice can be transferred to other areas and adopted by more organisations. What are its innovative and sustainable elements?*

YOOX is today the world's leading lifestyle online store. 23 years after its foundation, when the Internet and fashion were still two parallel worlds, the founder Federico Marchetti launched a bet that has now fully won. The YOOX experience has reached its full development, with mergers and acquisitions that have followed one another throughout its history, riding the development of a sector that exploded at the beginning of the 21st century. It is a fundamental case history to keep in mind for every project concern fashion, technology, innovation.

Contact details

Organisation: YOOX-NET-A-PORTER GROUP S.P.A.

Via Morimondo 17, 20143 Milano.

Number of registrations with the Chamber of Commerce of Milan Monza Brianza Lodi, tax code and VAT ID number: 02050461207. Share capital: Euro 1,384,207.41 fully paid-up.

Website www.ynap.com

Email press@ynap.com

7.8. Italian Artisan



Italian Artisan®
MADE IN ITALY, MADE EASY

Summary

Italian Artisan is an Italian fashion-tech startup created in 2015. It is a B2B one-stop marketplace that connects international brands with hard-to-get authentic artisans by providing online tools to easily source, compare and buy the finest pieces of Made in Italy. Through technological development, the platform consolidates the relationship between international entrepreneurs and local artisans, becoming a benchmark for "Made in Italy" in the world. The digital platform mission is to strengthen the tradition of Italian artisan fashion by connecting it with international brands.

The digital B2B platform Italian Artisan allows growing business to produce luxury fashion collections with Italian Artisans world-wide recognized quality at a flexible price.

What it is about this initiative that would be of particular interest to our target audience?

Innovative Business Model

Technology Application

Sustainable Pattern

Detailed information

1. Background and objectives – challenge addressed

Italian Artisan connects international brands with hard-to-get authentic artisans by providing online tools to easily source, compare and buy the finest pieces of Made in Italy. The digital platform mission is to strengthen the tradition of Italian artisan fashion by connecting it with international brands.

2. Starting point and duration

The history of Italian Artisan began in 2015 from an intuition of David Clementoni. His grandfather was an artisan and, after decades of hard work, arrived to success. Presently Italian Artisan boasts a team of 20 young talents, 80 percent of whom are women. In 2020 Olga Iarussi joined the company as co-founder and CEO.

3. *Geographical scope and coverage*

There are currently over 700 artisans and 10,000 international brands in the Italian Artisan platform, for a geographical distribution that covers 32 countries.

4. *Partnership (Lead partner and other partners involved)*

The platform has more than 11 thousand international brands and has established business partnerships with more than 700 Italian manufacturers and artisans, to whom it has already provided more than 500 orders from 45 countries.

5. *Funding resources*

At the end of 2022 the company got financed of 1,3 million of euros, with 500.000 € came from international business angel and other 800.000 € from Primo Ventures's fund.

6. *Target groups, stakeholders and beneficiaries*

In Italy there are thousands of small artisanal enterprises with long heritage of craftsmanship that produce outstanding masterpieces with little access to international Brands. On the other side, more and more Fashion Luxury Brands aspire to produce their "Made in Italy" collection because synonymous of recognized premium quality and expertise. Italian Artisan works as a bridge between Made in Italy artisan excellence and international brands.

7. *Methodological approach. How is this initiative working / implemented?*

How the platform works is simple: upload your design, receive a quote from the manufacturers that includes a price range, timing, and additional feedback, and finally produce your collection. With an international team following customers from negotiation to the final production of the collection, language barriers are no longer an issue.

Validation and lessons learned

8. *Success factors. Why is this initiative considered as a "good practice"?*

The platform guides brands through each step, from the upload process to choosing product categories to every detail of the collection.

Another highlight is transparency: producers do not join the platform with a simple click but undergo an entry procedure before they start producing.

Through technological development and enhancement, the platform consolidates the relationship between large entrepreneurs and small artisans, becoming a benchmark of "Made in Italy" in the world.

9. *Potential of replicability and/or up-scaling. Please explain if, why and how this good practice can be transferred to other areas and adopted by more organisations.*

What are its innovative and sustainable elements?

Italian Artisan presents itself as a solution to some of the problems present in the manufacturing sector and it is a useful example that can also be replicated on a different scale, for niche markets or for products of different genres.

The first problem addressed is related to the low level of digitalization and the difficulty of innovation of small and medium-sized enterprises, which cannot find a sustainable internationalization path.

On the other hand, the second issue concerns brands, even structured ones, that try to diversify production or do reshoring in Italy without being able to find a way to materialize their efforts, despite dedicating significant investments.

Contact details

Organisation ITALIAN ARTISAN

Via Cosimo del Fante, 16, 20122 Milano MI

Website <https://italian-artisan.com/>

Email info@italian-artisan.com

7.9. ACBC S.r.l.



Summary: a brief description of the good practice; overall purpose

ACBC (Anything Can Be Changed) is a leading Italian company in the design and production of sustainable products. It is the Italian first B-Corp-certified footwear company (B Corp certification is spread across 78 countries and 155 different sectors, issued by B Lab, a U.S.-based nonprofit organization. It identifies organizations that, in addition to pursuing economic profit goals, also meet the highest standards of environmental protection and social equity).

The basic idea of ACBC is based on a modular shoe. The models, for men and women, are modular: a hinge joins the upper and sole, guaranteeing functionality and a high level of customization. Sustainability is one of the key elements of the project, as well as the company's mission: not only does the system allow fewer shoes to be purchased reducing environmental impact, but the soles can be broken down, thanks to biodegradable materials disposed of and recycled.

Italy's first B-Corp-certified footwear company, ACBC (Anything Can Be Changed) was founded in 2017 with the stated goal of revolutionizing the world of fashion in a circular and sustainable way.

What it is about this initiative that would be of particular interest to our target audience?

Sustainable Pattern

Technology Application

Innovative Business Model

Detailed information

1. Background and objectives – challenge addressed

The stated goal of the company is revolutionizing the fashion world with a circular and sustainable change. ACBC is a leading BCORP for applied sustainability within the fashion industry and serves more than 50 global premium brands.

ACBC footwear is made from recycled, bio-based, animal-free materials with a significantly reduced environmental impact. ACBC uses materials such as recycled polyester from plastic bottles, or scraps from Tirol apple production.

2. Starting point and duration

The startup was founded in Milan in 2017 by Giò Giacobbe (Previously GM of Trussardi Asia Pacific, GM of Peuterey Asia Pacific) and Edoardo Iannuzzi (Professor of Sustainable Fashion at Politecnico Milano). From 2017 to date, it has produced more than one million shoes and also signed collaborations with national and international brands.

3. Geographical scope and coverage

ACBC has signed collaborations with more than 50 brands on the national and international fashion scene, opening single-brand store across the border. After Amsterdam and Beijing, ACBC has also landed in London.

4. *Partnership (Lead partner and other partners involved)*

The company's technological innovations and sustainability have generated collaborations with several high-fashion brands. In fact, in addition to its own collections, ACBC has collaborated with fashion houses such as Emporio Armani, Moschino, and Save the Duck. With Missoni, it created a shoe made from recycled plastic materials and waste from wheat cultivation, combining the fashion house's style with its classic combination of colors and stitching.

5. *Funding resources*

The company got its first boost from crowdfunding: presented on social in 2016, the project raised \$700,000. The most significant boost came after the founder of Triboo Spa joined the company. In 2020 ACBC reaches a turnover of about 4 million euros. The 2021 annual budget closed with +94% over the previous year's revenue. ACBC aims for a stock market listing by 2023.

6. *Target groups, stakeholders and beneficiaries*

Make fashion in a circular and sustainable way leads wide-range benefits. The research and development approach to sustainability is in line with the target price set by customers. The company has a 2030 mindset, with a vision to transform the industry with green innovations.

7. *Methodological approach. How is this initiative working / implemented?*

ACBC has been able to position itself as a point of reference in the sector market by following the highest ethical and quality standards in compliance with animal-free, bio-based criteria and through the use of recycled materials.

Validation and lessons learned

8. *Success factors. Why is this initiative considered as a “good practice”?*

Sustainability: ACBC adopts a scientific approach to sustainability, starting from the LCA or the CO2 analysis in order to have real data to start from.

From a mix of production waste from its own processes and water-based glue, ACBC obtains an expanded foam for making soles and uppers, thanks to which it is able to achieve zero waste.

Circularity: ACBC supports the principle of circularity: the footwear created, when its life cycle is over, can be returned to the company and later converted into shockproof flooring for playgrounds.

9. *Potential of replicability and/or up-scaling. Please explain if, why and how this good practice can be transferred to other areas and adopted by more organisations. What are its innovative and sustainable elements?*

New materials and cutting-edge recycling technologies are the strength of the company.

The business model with a green soul based on research and development can lead to the recognition of new patents (as happened to ACBC for the ZipShoes, FreeBio, Beyond plastic and BioHeel patents) and to enter into partnerships with international brands, increasingly interested in the issue of sustainability.

Contact details

Organisation ACBC S.r.l.

Via Guido Cavalcanti, 5 - 20127, Milano (MI)

Website <https://acbc.com/>

Email info@acbc.com

8. Conclusion

8.1. Summary of key findings

The fashion and design markets in Italy, Croatia, and Greece are undergoing significant transformations driven by a multitude of factors. As the world becomes more interconnected, global economic uncertainties, changing consumer behaviours, and a growing emphasis on sustainability are reshaping the industry landscape. In this context, circular business models are emerging as promising solutions to address environmental concerns and drive positive change in the fashion industry.

Circular fashion is a concept that aims to redefine the way clothing and personal belongings are produced and consumed. It challenges the traditional linear model, which follows a "take, make, dispose" approach, and instead focuses on creating a closed-loop system where the end of a product's life is equally important as its production. The adoption of circular business models presents an opportunity for fashion companies to shift towards a more sustainable and regenerative approach.

One of the key pillars of circular fashion is rental. Rental services, both peer-to-peer and through multi-brand platforms or individual brands, allow consumers to access clothing without the need to own them permanently. This reduces the demand for new clothing production and promotes the reuse of existing items. Similarly, the resale market is thriving, offering second-hand items through peer-to-sale platforms, third-party marketplaces, and own-brand re-commerce channels. By extending the lifespan of garments, this model contributes to reducing waste and conserving resources.

Repair and remaking are other essential components of circular fashion. The repair process involves fixing faulty or broken products or components, enabling their continued use. Remarking, on the other hand, involves creating new products from existing ones through disassembling, re-dyeing, and repurposing. These practices breathe new life into old items, reducing the need for constant production and reducing the environmental impact of the fashion industry.

For a textile company to fully embrace sustainability, it must consider several criteria. Designing products for both physical and emotional durability is crucial to ensure longevity and reduce waste. Production should be demand-driven, avoiding overproduction and excess inventory. Understanding the sourcing and production processes of components is essential to promote transparency and ethical practices throughout the supply chain. Moreover, products should be designed with an extended use phase in mind, encouraging consumers to cherish and use their items for as long as possible.

Digital innovation has also played a pivotal role in reshaping the fashion industry. E-commerce has become a dominant force, accounting for a significant portion of total retail sales in the EU. The European online fashion retail market is projected to grow substantially in the coming years, fueled by cross-border marketplaces and the increasing number of internet users.

Personalization has emerged as a balancing act, as consumers seek products tailored to their unique preferences. The metaverse, a virtual reality space, has opened up new possibilities for engaging with consumers and providing immersive shopping experiences. Brands are increasingly focusing on brand-building over paid ads, emphasizing storytelling and authentic connections with their target audience.

Sustainability has taken centre stage in the industry, with consumers demanding more eco-friendly and ethically produced products. Fashion companies are integrating sustainability into their strategies to meet these demands and reduce their environmental footprint. Social commerce, which leverages social media platforms to facilitate shopping experiences, has also gained traction as consumers seek convenience and community engagement.

Interestingly, while the digital revolution has driven much of the recent changes, the transition back to brick-and-mortar stores is also observed. Physical stores provide opportunities for tactile experiences and in-person interactions, offering a unique way to engage with consumers and strengthen brand loyalty.

The direct-to-consumer (DTC) model has emerged as a popular approach for fashion brands to engage directly with customers. By bypassing traditional retailers and wholesalers, DTC brands can control the entire customer experience, gain valuable insights into consumer preferences, and achieve higher profit margins. This model simplifies the business process and provides greater flexibility for startups and established brands alike.

Amidst these shifts and opportunities, challenges persist in the fashion industry. Global economic uncertainties, geopolitical tensions, and extreme weather events continue to disrupt supply chains and affect consumer demand. The ongoing COVID-19 pandemic has further accelerated changes in consumer behaviour, with a growing emphasis on sustainability and conscious consumption. However, inflationary pressures and rising energy costs may impact consumer spending patterns, leading to weaker or unpredictable demand.

In addition to the transformations in the fashion and design markets and the adoption of circular business models, it is essential for stakeholders to prioritize best practices for copyright and intellectual property (IP) management. Establishing clear ownership and usage rights is fundamental in co-design and co-development scenarios. Collaboration agreements and contracts should explicitly define copyright ownership in jointly created works and outline the scope and limitations of usage rights granted to each party, including commercial use, sublicensing, and modifications.

To protect sensitive information and trade secrets, non-disclosure agreements (NDAs) should be included in collaboration agreements. NDAs establish legal obligations for all parties involved to maintain confidentiality throughout the collaboration process, safeguarding valuable intellectual property.

Proper documentation and record-keeping are crucial for copyright and IP management. Thoroughly documenting the co-design and co-development process, including meetings, discussions, and decision-making processes, can serve as valuable evidence in case of disputes or infringement claims. Keeping records of copyright registrations, trademark registrations, and other relevant IP registrations strengthens the legal position of stakeholders. Open and regular communication among collaborators is key to successful copyright and IP management. Establishing clear communication channels allows stakeholders to discuss copyright ownership, usage rights, and any concerns related to intellectual property. Regular collaboration sessions help align understanding of copyright and IP issues and address potential conflicts, fostering fair and ethical collaboration. Educating designers and collaborators on copyright and IP best practices is vital to prevent inadvertent infringements and promote a culture of respect for intellectual property rights. Proper training and awareness about copyright law, intellectual property rights, and obtaining permissions and licenses for copyrighted material from external sources are essential components of effective copyright and IP management.

Recommendations for stakeholders:

- Designers and Brands: Familiarize themselves with relevant laws, establish clear collaboration agreements, and register copyrights and trademarks. Educate their teams on copyright and IP best practices and stay updated on industry standards.
- Educational Institutions: Incorporate intellectual property education into fashion and design curricula. Provide workshops and seminars on copyright and patents. Foster a culture of respect for intellectual property and sustainability.

- **Industry Associations:** Develop and promote industry standards for copyright and IP management. Organize educational programs and advocate for intellectual property protection. Collaborate with relevant entities to address industry-specific challenges.

In conclusion, the fashion and design markets in Italy, Croatia, and Greece are navigating through a complex landscape of opportunities and challenges. Circular business models present a way forward to promote sustainability and reduce waste in the industry. Digital innovation and the rise of DTC models are shaping new ways of engaging with consumers. However, macroeconomic uncertainties and evolving consumer behaviours continue to influence the fashion industry's trajectory. By embracing sustainability, fostering innovation, and staying responsive to evolving consumer demands, stakeholders in these markets can position themselves for a more resilient and prosperous future in the dynamic world of fashion and design.

8.2. *Implications for the future of the fashion and design industry*

The fashion and design industry in Italy, Croatia, and Greece is experiencing profound transformations driven by technological innovations, sustainability concerns, and changing consumer behaviours. As the second most polluting industry globally, after oil, the fashion sector is facing increasing pressure to address its environmental impact and lack of sustainability.

Fashion technology, such as artificial intelligence (AI), virtual reality (VR), 3D printing, and novel fabric innovation, has emerged as a driving force for innovation and sustainability. These technologies offer solutions to reduce waste, improve production processes, and enhance consumer experiences. For instance, AI can analyze trends and buying patterns, while VR allows customers to virtually try on clothes.

In addition, innovative applications and mobile commerce are promoting sustainability by empowering consumers to make informed decisions about their purchases. Rating apps, such as Good on You, provide transparency in the fashion industry by evaluating brands based on their treatment of people, planet, and animals.

Furthermore, Blockchain technology offers transparency and efficiency in the supply chain, enabling secure data exchange among stakeholders and easy tracking of fashion products. The Internet of Things (IoT) has limitless potential in fashion, enabling smart garments that can measure various parameters and offer personalized design suggestions.

Moreover, Virtual influencers have emerged as a unique marketing tool, providing brands with full creative control over their promotional content. However, they also raise concerns about unrealistic beauty standards and overly curated content.

Implementing sustainable packaging practices can also significantly contribute to the industry's efforts to become more eco-conscious. For example, Biopackaging presents an eco-friendly alternative to traditional plastic packaging, reducing waste and environmental impact.

Despite the progress made in fashion technology and sustainability, legislative support and government initiatives are essential to drive ethical and sustainable practices across the industry. Stakeholders also play a crucial role in demanding sustainable fashion through their own consumption habits and actions.

Consequently, knowledge dissemination from a young age is vital to cultivate a future workforce that is environmentally conscious and promotes innovation and change in the fashion and design sector. Looking ahead to 2023, fashion leaders must remain vigilant in the face of unpredictable and fickle consumers. Macroeconomic and political factors will influence operations and market evaluations. Brands should diversify their sales channels and adopt more creative marketing strategies to attract customers effectively.

In light of uncertain global sales projections, innovation and adaptation will be key to success in the fashion industry. Renting and sharing clothes, along with the emergence of digital fashion, present promising alternatives for sustainable fashion consumption and reducing overproduction.

European countries have made commendable progress in addressing industry challenges through collaborations and innovative solutions. However, achieving a fully sustainable fashion industry requires ongoing collaboration and investment in sustainable practices.

Forming alliances to enhance promotional activities and secure access to raw materials while gaining better supply chain oversight is likely to be the next significant trend in the fashion and design industry.

In conclusion, the future of the fashion and design industry in Italy, Croatia, and Greece hinges on the integration of technology, sustainability, and consumer consciousness. Embracing fashion technology to drive innovation and sustainability, promoting ethical practices, and fostering a more responsible industry will create a more prosperous and sustainable future for the fashion and design markets in these countries.

8.3. Recommendations for stakeholders in the industry

The fashion and design industry in Italy, Croatia, and Greece is a complex ecosystem with multiple stakeholders, each playing a crucial role in shaping the market. As the industry faces challenges related to sustainability, environmental impact, and consumer demands, it is imperative for stakeholders to come together and take proactive steps to ensure its growth and survival in the face of global economic uncertainties.

Fashion designers, as the creative minds behind designs, need to prioritize sustainability and consider the environmental and social impact of their creations. Embracing circularity and durability in designs can promote longevity and reduce waste in the industry. Collaborating with suppliers to source sustainable materials and exploring innovative technologies for eco-friendly creations can further drive positive change.

Suppliers also play a pivotal role in promoting sustainability in the industry. By offering sustainable materials and adopting eco-friendly practices in production, they can support the efforts of fashion designers and brands towards sustainability. Seeking partnerships with ethical and socially responsible brands can help create a more sustainable supply chain.

Pressure groups focused on environmental and social issues can influence fashion companies to adopt more sustainable and responsible practices. By advocating for transparency and driving meaningful change, pressure groups can address the issue of greenwashing and ensure that brands uphold their sustainability claims.

Customers, as the most important stakeholders, hold significant power in driving change in the industry. By demanding transparency, sustainability, and ethical practices from fashion brands, consumers can shape the market's direction. Embracing second-hand clothing and supporting circular fashion initiatives can promote a more sustainable and eco-conscious approach to fashion consumption.

Employees, with their diverse range of skills and knowledge, are essential in driving innovation and creativity in the fashion industry. Companies should foster a culture of sustainability and ethics, empowering employees to contribute to positive change and responsible practices.

Governments also have a vital role to play in supporting sustainable fashion practices. By creating a regulatory environment that incentivizes and rewards sustainable practices, governments can encourage investments in green technologies and circular fashion initiatives. Collaboration with industry stakeholders is essential in developing policies that address environmental and social concerns.

Fashion brands need to embrace sustainability as a core value and communicate transparently about their sustainability efforts. Avoiding greenwashing and investing in credible and meaningful sustainable initiatives

will build consumer trust and loyalty. Embracing digital transformation and innovative technologies can enhance customer experiences and improve operational efficiency.

Educational institutions have a responsibility to integrate sustainability into fashion and design curricula. Educating the future workforce on eco-friendly practices and innovations will shape a new generation of fashion professionals who prioritize sustainability.

Collaboration among stakeholders is crucial in driving sustainable practices and innovations. By working together, the fashion industry can amplify the impact of sustainability initiatives and accelerate positive change.

In conclusion, the fashion and design industry in Italy, Croatia, and Greece faces significant challenges, but also tremendous opportunities. Embracing sustainability, innovation, and digital transformation are key to shaping a more resilient, ethical, and future-ready fashion market. Through collaborative efforts and responsible practices, stakeholders can drive positive change and position the fashion industry for a more sustainable and successful future.

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