A 2.3 – ITALY

Industry Professional Interview Report

IG FASHION

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1. INTRODUCTION

 The field research has been conducted in Italy throughout May 2023. The interviews involved professionals from the fashion and textile world, with roles ranging from garments designers to managers of relations with suppliers, local bodies and institutions, e-commerce managers, researchers, market analysts, investments' trends forecasters and sustainability consultants. The heterogeneous set of professionals interviewed meant that our research was enriched with very different points of view and insights reflecting the composite reality of what is called the industry of fashion, but which at its core encompasses a very broad and diverse set of professional figures. The ten interviewees all work for small and medium-sized enterprises, many of which are in the provinces of northern regions, which in itself reflects the nationwide distribution of the Italian industrial system, in this specific case, the textile and fashion industry. The questions were elaborated and defined upon jointly by the project partners, asked to the interviewees following the form where the data disclosed below has been gathered.

All respondents are active within the fashion industry, and they all proved to have a good level of digital literacy, general knowledge and understanding of the uses and potential of Artificial Intelligence technology in their work sector. This is the case of AI chatbots and assistants that have taken hold in the retail world, especially around customer service and clients shopping experience, which is now much faster and 'smarter'. Additionally, respondents are aware of the capacity of AI to make the supply chain and business processes more efficient, centralizing information management thus speeding up processes, reducing the margin of error, and enabling more efficient and effective product handling and inventory management. Some of them are already adapting their internal processes to integrate new digital tools based on AI technology.

In Italy, however, fashion remains a strongly artisanal and manufacturing sector, which poses challenges to the diffusion of these technological tools, first and foremost the idea that they do not conform to the business philosophy of small companies working in collaboration with other local businesses, most of the time within a short supply chain. The high cost in terms of both human and financial capital is another reason for professionals to be very careful when investing in these digital innovations.

This research was conducted with the aim of investigating the existing ways AI technology – especially Chatbots – is employed in the fashion industry, also with a view to environmental sustainability, so as to understand the strengths and weaknesses of such tool.

2. METHODOLOGY

The methodology of this report is based on qualitative research in the form of interviews with fashion industry experts of Italy. During this process, ten respondents have been interviewed in a face-to-face or recorded modality.

A preset form to record the answer of the respondents was used through Google Forms. The structure of the interview contains three sections: "Demographic questions" (7 questions), "Use of Artificial Intelligence within companies" (20 questions) and "Overall opinion of AI impact on the fashion industry" (6 questions). The target group of this interview is represented by fashion and textile industry professionals, from any point of the supply chain, as well as retail. The scope of the interviews is to identify how AI is currently being used by fashion and textile companies in the market of today, the level of technological readiness and their overall opinion on how AI can impact the industry.

The information received during the interviews is subject to further coding and analysis, in order to structure and conclude all the information received. The coding is created based on eight of selected relevant indicators: Company activity; Digital solutions currently used in companies (and how they are being used); Reason to use AI in a company; Benefits/Advantages of AI use; Concrete results of AI use; Overall opinion on AI use; Concerns/challenges about using AI; Implementation of sustainability practices in the fashion industry process chain. The questions with a closed character are analyzed based on numerical data processing through the Google Forms software.

The coding indicator list includes the following topics:

- Company activity
- Digital solutions currently used in companies (and how they are being used)
- Reason to use AI in a company
- Benefits/Advantages of AI use
- Concrete results of AI use
- Concerns/challenges about using AI
- Overall opinion on AI use
- Implementation of sustainability practices in the fashion industry process chain.

3. RESULTS

3.1. Company Background

Almost all of those interviewed (9 out of 10) have been active in the sector for less than 10 years, with only one exception made by a respondent who has between 0 to 5 years of experience. They all work in Italy, mainly in northern regions such as Piedmont, Lombardy and Emilia Romagna. **The companies represented are** Within their companies 70% of the respondents has an executive role, with a 10% of respectively: entrepreneurs, product designers and sustainable managers. Their professional responsibilities range from garments design to relations with suppliers, local bodies and institution, e-commerce platforms management, research, market analysis and forecast for investments in technological innovations, sustainability consulting. All respondents work for SMEs in the textile and fashion industry, more specifically these are: fashion tech and design start-up company, worsted yarns company, company processing, finishing, and dyeing noble fibers, a textile group, specialized in the production of yarns for fashion, furniture and various technical uses, brands of customizable bags, tailor-made outerwear, shoes, sartorial company, knitwear company.

3.2. Use of Artificial Intelligence within fashion companies

3.2.1 Level of digitalization in fashion companies

The level of digital literacy of the companies surveyed in this interview is medium-high. On a value scale of 1 to 5, where 1 represents the minimum level and 5 the maximum level, 40% of respondents fall in the middle (3), while 30% reach a good level (4) and 20% reach the highest (5). Only one respondent falls below (2). 100% of the respondents answered yes when asked if they use digital technologies in your processes.

According to the interviewees, the use of digital technologies is currently integrated in almost all processes. The supply chain is entirely digitalized, with automated control systems, which guarantee traceability and compliance with the quality standards required by customers, not only of raw materials but also of supply systems ethical policies.

Same goes for the managed system throughout for both the active and the passive cycle, including administrative, logistical, monitoring, and commercial processes.
The most popular technology among respondents is CAD for machine management and 3D modelling for garment design and engineering. MJF (multi jet Fusion), 3D printing and S4LS (Selective Laser Synthesis) as well are utilized to create hundreds of parts in a single print.

9 respondents out of 10 have heard about Artificial Intelligence (AI) being used in fashion. The interviewees demonstrated a good knowledge of the topic, either through first-hand experience or research. According to their answers, the most widespread use of AI is to automate industrial processes (e.g., the whole supply chain, administrative

and logistical activities) and customer service, especially via chatbots. It is also used to collect and analyze big data to customize products and support processing and evaluating processes; 3D modelling and simulation to study prototypes before production; to track and trace products.

Despite general positive opinions about AI technology, on a value scale of 1 to 5, where 1 represents the minimum level and 5 the maximum level, as much as 50% of respondents falls below average (2) with even one response against the integration of this technology (1). The remaining percentage (40%) however falls in the middle (3). These figures could be explained by taking a look to the answers provided later on in the interviews when asked about the challenges to encounter in using such technology.

Digital solutions currently used in companies (and how they are being used):
- *Administrative processes, modelling design and planning, as well as fabric printing are thoroughly digitised.*
- *CAD2 modelling and leather cutting*
- *Monitoring system of all manufacturing and chemical processes.*
- *Digitalization of energy production through photovoltaic system*
- *ECOTEC registered technology to give new life to pre- and post-consumer textile waste*
- *MJF (multi jet Fusion), 3D printing and S4LS (Selective Laser Synthesis) to create and print hundreds of parts in different and difficult shapes all at once,*
- *Document archiving system*
- *Scanner quality controls*
- *Remote programming for subcontract processing*
- *Artificial Intelligence to investigate processes and products ecological footprint*

3.2.2. Use of AI in fashion companies

When asked if they heard about AI Chatbots in the fashion industry, 8 respondents out of 10 answered yes, while 1 never heard of the use of AI Chatbots in the fashion industry and 1 is not sure. 8 respondents out of 10 have used AI Chatbots in their companies. According to the experience of the respondents, Chatbots are really useful tools when it comes to customer service and shopping experience. The offer of "digital clothes", worn by an avatar according to the input of the customer, facilitates and speeds up the purchase and increases its chances of success. Chatbots are also considered relevant for researching and training purposes. When answering on the relevancy of AI chatbot for the companies where they are employed on a value scale of 1 to 5, where 1 represents the minimum level and 5 the maximum level, 60% of respondents falls in the middle (3), while 40% falls below (2).

6 out of 10 respondents stated that they apply AI technology in their company processes. More specifically, they use it for: supply chain management, design, rapid data analysis, e-commerce assistance, personal research to understand how it works,

gaming. Those who stated that they do not apply AI technology in their company processes, said to be interested and are carrying out research to understand how to adapt certain technologies to the manufacturing and craft production of their companies.

100% of interviewees answered yes, when asked if they think it can be adapted to a fashion company's needs.

Reasons identified for using AI in a company:
- *Automate production through robotic applications.*
- *Customer shopping experience through virtual reality*
- *Customer assistance and interaction.*
- *Support the creative processes of planning, writing, setting and solving problems.*
- *Product customization through big data analytics.*
- *Remote management of the warehouse.*
- *Monitor the entire supply chain.*
- *Catalogue customization.*
- *AI Chatbots to automate standard mechanic tasks.*
- *Remote scanning to acquire measurements, using anthropometry tools.*
- *Virtual samples to test consumer interest.*
- *Disseminate model and prototypes.*

3.2.3. Challenges, benefits & concrete results of using AI in fashion companies

90% of respondents answered yes when asked if they experienced concrete results or changes in the company using chatbots.

Some concrete results identified among the answers provided:
- Personalized customer service.
- Foot scanning systems to identify footwear size and wearability.
- Made to order Product customization.
- Different soles cushioning systems to adapt them to the ground.
- 3D printing additive manufacturing

The biggest challenge identified by the respondents concerns the integration of this technology tool within the business model/system (100%). Equally challenging are the high costs and finding experts capable of working with this technology (80%). In fact, 7 out of 10 respondents regard the skills of employees who have to work with this technology as a challenge. Furthermore, 6 out of 10 respondents see data security, adapting to the required computing power and understanding and interpreting the results as another important challenge to be taken into account. 4 out of 10 mentioned data quality, while only 10% referred to biased results, data storage and no real growth/improvement/benefits have been observed over a longer period of time. Among the challenges identified, one respondent claimed to be concerned about AI chatbots social and ethical impact, which does not seem sufficiently governed. Chatbots used for

Customer support, advice etc. are meant to help sell products and gather information. All of us are already part of the algorithm, thanks to the web traces we leave. What makes the difference is the gap between those who know they are doing so and those who do not. It is an awareness question. The risk is an irreversible polarization between those who have the tools to govern the process and those who are cut off. Another issue is that of job cuts.

The biggest benefits identified by the respondents concerns the execution of highly complex tasks (100%), an easier search for information (100%) and the continuity of operations carried out uninterruptedly (90%). Equally beneficial are the increased production efficiency, better planning and organization, automation of processes, the collaboration between different parties, increased clients' satisfaction and better customer care and recommendations (80%). 7 out of 10 respondents mentioned increased performance, while 4 out of 10 respondents see easier decision-making process, intelligent forecasting and improved sustainability as great benefits derived from the use of this technology. Furthermore, 3 out of 10 respondents consider predictability, fewer mistakes, lower need of human resources, constant market and competitor analysis, shorter lead-times and reduced costs has the main pros of AI technology and chatbots more specifically. Only 1% of the interviews referred to increased revenue from better sales. Among the benefits identified, one respondent suggested the possibility of letting the customers play and offer detailed product information.

Summarizing the comments and insights provided by the interviewees, it can be argued that the main benefits of using such technology are the support provided to the employees in carrying out highly specialized and complex tasks, a streamlining and facilitation of research work and the increased consistency of the processes. On the other hand the main challenges identified are: the difficulty of integrating this technology within the business model/system, the high costs and the lack of professionals duly prepared and able to work with this technology.

3.3. Overall opinion of AI impact on the fashion industry

100% of respondents think AI will change the way fashion is created and sold in the future. Although most interviewees were positive about the impact AI chatbots will have on the fashion industry, there is no shortage of concerns. All respondents are very interested in following the development and increasingly innovative uses of this technology in the industry; however, they believe the information gathered through the chatbots should be inspected and verified to avoid a distorted and instrumental use of them, which could result in the spread of false and potentially misleading information to both customers and companies. Indeed, it is necessary to develop a management system for transparency and correctness of information to protect the user. In fact, as another interviewee points out, one of the limitations of AI chatbots it is that they offer customers a large amount of information only on specific topics selected by producers (e.g., use of certain raw materials, water or energy consumption, sustainability declarations in certain production processes) without providing an overview that allows

and effective assessment of products sustainability (e.g., with respect to recycling). Another concern relates to the high costs to be incurred in order to transfer and adapt such technology to the needs of single enterprises, which is probably affordable by luxury brands and companies, making such technology a niche. Lastly two important concerns noted by the respondents need to be underlined, namely the social and environmental cost of AI technology due respectively to the risk of job losses and to the enormous energy consumption.

100% of respondents think an AI Chatbot could be a useful tool for the fashion industry. Respondents recognize the countless useful uses that AI chatbots have and will have in the fashion industry, first and foremost the support provided to the customer care sector. AI chatbots are developed through an algorithm that can communicate naturally with users, executes commands, and guide them towards potential purchases. These virtual assistants progressively improve their performance, through constant collection and processing of data provided by users. Indeed, many brands are using this technology to interact with customers, also offering innovative services for interactive visuals and immersive shopping experiences. As stated by one of the respondents, customers do not just want to buy products, they also want to have a real experience, interact, and communicate with the brand they choose, and AI is the best technology to meet the expectations and shopping desires of the customers, offering high-quality customized products.

On the other hand, AI Chatbots can provide a great technological support across the board and at every production stage: from garments design through 3D modelling and simulation for the conception of prototypes before production, to augmented reality both for virtual show or virtual fitting rooms, but also management of supply chain and logistics, for instance warehouse management, product track & trace and so on.

Additionally, an insight very relevant to our research concerns the potential usage/benefits of AI Chatbots for educational purposes. One respondent believes that AI Chatbots can help educate consumers, bridging the gap between those who are aware of the environmental impact of their choices and those who simply do not.

When asked if, considering the fact that chatbots are currently used in the industry for the retail segment, specifically e-commerce advice for clients, do they think these same functions could be adapted to advise the designer/design process, 80% of respondents said yes, while 10% is either not sure or do not agree at all. 60% of respondents see in the AI Chatbot a useful tool to tackle the environmental footprint of the fashion industry, and the remaining 40% does not have a clear idea about it.

The opinions about the overall use of AI in the fashion industry are:
- *Great tool for research purpose*
- *Its feature of 3D printing provides a competitive advantage through the reduction of production costs and the increase in production equipment flexibility aimed to fulfil highly customized requests*
- *Great support to professional activities to improve performance in the different production processes*

- *Capable of having a big impact across the board and at every production stage: from collections created with the help of algorithms and machine learning to chatbots that turn into personal shoppers, from virtual dressing rooms to services and products personalization.*
- *Capable of educate consumers, bridging the gap between those who know and those who don't through chatbots.*

3.4. Implementation of sustainability practices

All respondents are close to the environmental cause and try to do their part to tackle the environmental impact of the fashion industry.

However, it is a common and shared opinion that the guidelines and measures that the EU is introducing are strict and very onerous. The EU is introducing limits which set very high standards that must be accepted by all member countries and individual companies, but these new EU parameters are taken up from the systems of different countries, with different regulations and with non-homogeneous standards. Many of them complain that they invest a lot in internationally recognized certifications (RVS, GRS, GOST), use local and sustainable materials, produce everything in a short supply chain and do not receive any kind of facilitation, but on the contrary are treated like any other company that does not implement sustainable practices at all.

In general, their efforts are focused on saving water and energy, reducing emissions, minimising fabric waste, and guaranteeing quality for prolonged garment life. To this end, they prefer to source first from suppliers who certify sustainable production and provide full access to information on the raw materials, but also promote production waste and raw materials recovery and recycling as well as rationalize the use of natural resources. At the level of energy, some of the interviewees use renewable and self-produced sources such as solar plants.

Finally, at the level of production, they undertake to produce only what they anticipate will already be sold, avoiding unsold and wasted materials and energy.

Here are some examples of technologies used to increase the sustainability of production in the companies for which the interviewees work:
- A purification plant which recirculates clean water;
- A state-of-the-art technology for rock dyeing that drastically reduces water and energy consumption, operating in accordance with stricter environmental standards than the ones required by current regulations;
- The color study process in the internal laboratory has been completely automated, thanks to state-of-the-art machinery that guarantees a very high level of efficiency and precision in color tests results, with no need for the operator to get in touch with chemical substances.

100% of respondents stated that they did introduce circular economy practices in their business. Two of them shared their personal experience:

"Marchi & Fildi and Filidea has operated as a circular economy company since 1969. Then, 20 years ago the company decided to invest to develop an ECOTEX brand which was registered 15 years ago. Production waste was recovered trying to obtain high quality yarns by bringing them back to thread. In the last five years the market has been asking for recycled yarn, so interest has widely grown. The company has always invested in recycling. Environmental protection is a priority, and all employees are required to work in line with this principle. The company guarantees all products traceability through their internal systems, with blockchain technology and asks the same from external collaborators. Marchi & Fildi and Filidea asks their contractors to be certified by the same certification bodies the company uses. No material from an uncertified contractor is used. In the TRICK project the company is a leader for the recycling know-how."

"Circular economy is one of Tessile & Salute strong points. We have been working on that with local companies for years. Personally, I have some doubts on textile products recycling. These doubts come from decades of experience on the use of chemicals in the textile industry in the past and on the consequences for people's health. Chemical sustainability in the fashion industry has undergone a dramatic change in the last decade, with the banning of lots of substances. recycling of clothing and fabrics, produced in the past with now outlawed parameters, might mean recirculating harmful substances to people's health. Precise assessments of materials should be made before sending clothes and fabrics into recycling, in order to decide what to put back into circulation in clothing productions and what to reuse only at an industrial level, avoiding contamination with products that must comply with current standards."

Implementation of sustainability practices in the fashion industry process chain:
- *Produce few pieces and many combinations to minimize fabrics waste and guarantee quality for prolonged garment use*
- *Implement production processes that allow to save water and energy and reduce emissions, in compliance with certificates like: RVS, GRS, GOST.*
- *Use natural, traceable, certified raw materials to guarantee yarns high quality performance and reduce textile waste.*
- *Promote production waste and raw materials recovery and recycling and rationalizes the use of natural resources*
- *Own a solar plant for independent energy production*
- *Collaborate with local manufacturers leaders in environmental protection*
- *Manage small production batches, to match production with sales and avoid unsold*

5. CONCLUSIONS

Having to draw conclusions on the current use of digital tools based on AI in the fashion and textile industry and possible future scenarios, the general opinion of the interviewees can be considered positive. The long experience and high level of professionalism of the interviewees allowed us to get a broad picture of the use of this technology in the different areas of the fashion industry, but also of the limits and virtues of its integration.

Although almost all respondents use digital tools – some of them based on AI - to speed up their production processes, manage warehouses and logistics, accompany customers during purchases, track products and so on, some form of skepticism remains. There is a common opinion among respondents that AI and chatbots are technologies that are too expensive, or whose integration requires considerable adaptation costs for companies, which small and medium-sized enterprises find difficult to bear. So, despite the great curiosity and desire for innovation, the general idea is that these are technologies intended to be used only by large companies or luxury brands, as after all is already happening. Another fear concerns the potential loss of jobs for professionals in the sector. It is true that AI is able to perform mechanical and repetitive tasks uninterruptedly, being more efficient than any human resource carrying out the same task, hence, even though this can equally be seen as a strength of the technology, it remains one of the main deterrents. Lastly, the local and artisanal dimension of most Italian SMEs in the sector, raises another doubt among interviewees, namely the lack of adaptability of these technologies.

Notwithstanding, respondents recognize the potential of AI and chatbots both for companies and customers, but also as research and training tools. Furthermore, the companies for which the interviewees are employed have sustainable practices in place to limit their environmental footprint, measures ranging from energy efficiency systems to the use of eco-materials, fabric recycling and beyond. They are aware of the support that AI technology could provide when it comes to reduce waste production and emissions and are curious to learn more on the topic.

The interviews conducted made our research successful and provided us with the necessary information and insights to proceed with the elaboration of high-quality project deliverables.

ANNEX - CODING TABLE

Indicator Number	Indicator	Indicator color	Associated text
1.	<mark>Company activity</mark>	Yellow	- Fashion tech and design start-up company; - Worsted yarns company - Company processing, finishing and dyeing noble fibers - Textile group, specialized in the production of yarns for fashion, furniture and various technical uses. - Brand of customizable bags - Brand of tailor-made outerwear - Shoes brand - Sartorial company - Company specialized in knitwear
2.	Digital solutions currently used in companies (and how they are being used)	Green	- Administrative processes, modeling design and planning, as well as fabric printing are thoroughly digitized. - CAD2 modeling and leather cutting - Monitoring system of all manufacturing and chemical processes. - Digitalization of energy production through photovoltaic system - ECOTEC registered technology to give new life to pre- and post-consumer textile waste - MJF (multi jet Fusion), 3D printing and S4LS (Selective Laser Synthesis) to create and print hundreds of parts in different and difficult shapes all at once,

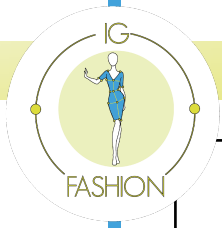|			
			- Document archiving system - Scanner quality controls - Remote programming for subcontract processing - Artificial Intelligence to investigate processes and products ecological footprint
3.	Reason to use AI in a company	Blue	- Automate production through robotic applications. - Customer shopping experience through virtual reality - Customer assistance and interaction. - Support the creative processes of planning, writing, setting and solving problems. - Product customization through big data analytics. - Remote management of warehouse. - Monitor the entire supply chain. - Catalog customization. - AI Chatbots to automate standard mechanic tasks. - Remote scanning to acquire measurements, using anthropometry tools. - Virtual samples to test consumer interest. - Disseminate model and prototypes.
4.	Benefits/Advantages of AI use	Red	- Reduce production costs - Increase in production equipment flexibility - Optimize production processes to customize garments according to customer requests - Improve the environmental impact of fashion by producing only what is needed with traced materials, which facilitates garments end of life management.

			- Support the general progress and innovation of the fashion industry - Increase interconnection in real time of workers of different departments - Improve quality and speed in research - Facilitate the customer shopping experience - Smart management of supply chain and logistics
5.	Concrete results of AI use	Grey	- Personalized customer services. - Foot scanning systems to identify footwear size and wearability. - Made to order Product customization. - Different soles cushioning systems to adapt them to the ground. - 3D printing additive manufacturing
6.	Concerns/challenges about using AI	Pink	- Risk of distorted and instrumental use of information gathered through AI. - Need for large amounts of capital to invest, which would isolate the entire industry made up of small and medium-sized enterprises - Risk of job losses; - High implementation and adaptation costs; - A large amount of information only on specific topics selected by producers without providing an overview that allows an effective assessment of products sustainability;
7.	Overall opinion on AI use	Purple	- Great tool for research purpose - Its feature of 3D printing provides a competitive

				advantage through the reduction of production costs and the increase in production equipment flexibility aimed to fulfil highly customized requests - Great support to professional activities to improve performance in the different production processes - Capable of having a big impact across the board and at every production stage: from collections created with the help of algorithms and machine learning to chatbots that turn into personal shoppers, from virtual dressing rooms to services and products personalization. - Capable of educate consumers, bridging the gap between those who know and those who don't through chatbots.
8.	Implementation of sustainability practices in the fashion industry process chain.	Orange		- Produce few pieces and many combinations to minimize fabrics waste and guarantee quality for prolonged garment use - Implement production processes that allow to save water and energy and reduce emissions, in compliance with certificates like: RVS, GRS, GOST. - Use natural, traceable, certified raw materials to guarantee yarns high quality performance and reduce textile waste. - Promote production waste and raw materials recovery and recycling and rationalizes the use of natural resources

			- Own a solar plant for independent energy production
			- Collaborate with local manufacturers leaders in environmental protection
			- Manage small production batches, to match production with sales and avoid unsold