Fashion designer, fashion consumer, fashion learner.

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Abstract. Fashion Design is a complex sector, formed by scattered consumers and companies, by non-linear models of production and by dynamic information flow. Sustained by technology pervasiveness fashion designers and fashion consumers create content around fashion brands, beyond the formality of products. New models of consumption fashion push new models of fashion design and should be pushing new models of learning. What kind of learning model can better prepare future professionals to contribute to the sector? This paper hypothesizes that online collaborative environments represent a valid alternative to recognize fashion designers, as fashion consumers, as ‘lifelong’ fashion learners. We confronted the results obtained in previous studies with recent data gathered from providers about consumer behavior on global online and mobile usage and penetration, fashion design sector in Europe and fashion design ‘e-commerce’ worldwide. The results demonstrated that although fashion figured as the most significant eCommerce segment in 2017, fashion design higher education programs offered online are either non-existent or merely transpose the traditional lecture-based education models to online settings. This paper also presents heutagogical principles for fashion design higher education, demonstrating how they could collaborate to bring together fashion consumption, fashion design development, and fashion design learning.

1. Fashion Design sector contextualization and the research problem.
Fashion Design belongs to a complex, demanding and technologically saturated sector, critical to the global economy, formed by scattered consumers and companies, and by non-linear models of production, distributed in an extended supply chain ([1]). Characterized by planned obsolescence, fashion products present short life cycles and vast differentiation, so brand loyalty is a necessity. In order to retain consumers loyalty, fashion brands need to captivate their consumers continually. In reality fashion is characterized by a high information flow, where the immaterial level has a greater significance and consumers buy ‘access to ideas’ ([2]) embodied in fashion products, or share the fashion brands values and lifestyle through meaningful experiences and points of interactions. The most influencing fashion brands communicate with hyper-connected, dispersed fashion consumers while exploring new business models. Benefiting from the mobile penetration and social media reviews, fashion brands capitalize on co-creation, personalization through data analytics, artificial intelligence (AI) or virtual reality (VR), on product quality and sustainability through 3D technology, on creating loyalty throughout the purchase journey integrating in-store and online services, on built communities around brand’s culture, history. So, while fashion designers research in trend forecast online platforms, and create through specialized software, they also resort to social media and fashion consumers, lifestyle bloggers, vloggers, ‘Instagrammers’ that generate content around fashion, through fashion and for fashion. This ‘fluid’ landscape, where fashion brands, fashion designers, and fashion consumers interact in a seamless and symbolic dimension, beyond the materiality of products, as a global community
engaged online. Non-traditional models of consuming fashion push new models of fashion design, new models of fashion retail, and should be pushing new models of fashion design learning. So, if we assume that fashion design higher education is immersed in this complex, technologically integrated, albeit dispersed landscape, what kind of learning model can better prepare future professionals to contribute to the sector? This paper hypothesizes that, if fashion designers, fashion consumers and fashion learners ‘navigate’ in a technology-immersed, online, global and fast-changing network, then a more evident fluidity between the development, the consuming and the learning of fashion design should be studied. We also hypothesize that fashion designers and fashion consumers are more inclined to become fashion learners and vice-versa. Therefore, this paper aims to demonstrate the need of a different approach for fashion design higher education, and that online collaborative, hybridized environments, represent a valid and innovative alternative for fashion designers/consumers/’lifelong’ learners.

2. Theoretical Framework and methods

The theoretical framework and the methods adopted in this paper are presented in five phases, elaborated to confront the results obtained in previous studies about fashion design higher education in Europe, offered in online settings, with recent data gathered from providers of market and consumer research, in order to demonstrate how the online, digital and mobile worldwide usage and penetration, the fashion sector in Europe and the fashion ‘e-commerce’ worldwide relate to fashion design education online offer. Although focused in Europe, the comprehensiveness of the data researched is also worldwide oriented, since fashion brands, companies, designers, consumers, and learners share a global, borderless, timeless environment. This paper applied a quantitative approach to understanding whether and how technological development and adoption (online, mobile, social networking, AI, and VR) were influencing fashion sector and would consequently influence fashion learning contexts.

The first phase presents data from statistical sources that covers the period between 2015 and 2018, with projections to 2019 up to 2025. It focuses on world population, on internet, social media and mobile penetration and adoption worldwide ([3], [4], [5], [6]), on digital economy and eCommerce market, emerging trends, consumer behavior and business models ([7], [8], [9]). Next, to understand how the digital, online technology affects the education sector, the second phase of the study resorted to data centered on learning technology markets ([10], [11]) covering a period from 2016 - 2018, with projections to 2019 up to 2025. In the third phase, the study sought to understand how technology is affecting fashion design practice, fashion market trends, and consumer behavior. This study analysed information about the fashion industry in Europe ([12]), and more specifically about fashion eCommerce ([13]) with sectoral reports that provided a broad understanding of fashion and design trends, retail, consumption, as well as behavior changes in fashion consumer habits, desires and needs in relation to technology. The fourth phase meant to confront the fashion design education offer, with the scenario formed by the data gathered in the previous phases, in order to understand to what extent, it met market demands and professional/personal needs. Since this paper is part of a broader research, the perspective remained on fashion design programs, delivered online, in Europe, anchored in previous studies ([14], [15]) that had identified two programs, accordingly to the criteria stipulated: Architecture and Design, Fashion direction (Architettura e Design Industriale, Indirizzo Moda), provided by Università Telematica San Raffaele Roma and Design and Fashion Education (Design e Discipline Della Moda), offered by Università Telematica eCampus. From the relations previously established between heutagogical principles ([16]) and fashion design learning principles, a final phase is presented to demonstrate how the results from the previous four phases are relevant for the fashion sector as a whole and the fashion design higher education specifically. This fifth phase presents five recommendations to be discussed in the next section: Reflective Thinking; Research and Interpretation; Creativity and Imagination; Collaboration and Communication; Complexity and Uncertainty. The relations presented in the recommendations are neither direct, definitive, closed, exclusive, nor hierarchically organized. Resort to the heutagogical principles as a theoretical foundation for fashion design learning, requires understanding that they work systemically and can relate differently, in different contexts and for different purposes.
3. Results and discussion
This section presents the four ‘themes’ (paragraphs) that synthesize the results obtained from recent data gathered from providers of the market and consumer behavior, confronting it with the fashion design programs offered online. The first ‘theme’ presents results on global online and mobile usage and penetration. It dialogues with the second ‘theme,’ that presents data about the fashion sector in Europe and fashion ‘e-commerce’ worldwide. The third ‘theme’ presents data about the learning market in technological contexts, and the fourth theme presents the fashion design programs selected, in the light of the information gathered in the previous ‘themes.’ Finally, we discuss five recommendations.

From the 7 billion of the world population, more than half are the internet, mobile and social users and almost 2 billion are digital buyers ([3], [5]). In fact, eCommerce market revenue (€1,612,984m in 2018) will reach €2,353,428m by 2022 ([3], [5]). Fashion industry market value worldwide is US$3bn, (2018 statistics [12], [13]), and Western Europe is €333 million (US$380m). Interestingly, eCommerce market’s largest segment is precisely Fashion (€472,245m, 2018), accounting for 28% of the total revenue ([13]) and ‘Apparel’ is Fashion’s largest segment (€308,256m, 2018). Furthermore ‘Fashion and Beauty’ is also the common category in which consumers spend more ([3], [4]). In Europe, clothing segment accounted for revenue of €75,828m in 2016 and will remain among the most important digital markets by 2020. In 2017, Clothing and Footwear accounted for 40% online and 51% In-Store buying preference (from 24,471 respondents worldwide). Similarly, in a 2016 survey, products related to fashion ranked as the most popular online shopping category among 30,000 internet users, with 58% share ([13]).

The purchase behavior of fashion buyers is more participative when based on community inspiration and influence ([6]), as in recommendations and reviews. It is notorious how buyers and their peers engage and share views and opinions among them or with the brands ([7]). Social media integration, higher mobile internet connectivity, accessible smartphones and data tariffs, 5G technology (which will be commercially available by 2019), indicate a global shift to mobile ([4]). As a consequence, the mobile commerce is projected to reach $250bn in global sales by 2020 and mobile phone users are expected to surpass 5 billion in 2019 and 6 billion in 2025 ([4]). This trend reveals a new dynamic between creators, brands, companies, and consumers, increasing meaningful connections around the content, through digital platforms and services ([6]). The shift to mobile also resonates with the eCommerce Fashion segment, where unlimited mobile access and social media (especially Instagram or Snapchat) seamlessly integrate online and offline channels and services, from virtual fitting rooms to visual data analysis, creating a much more connected and personalized approach to consumer preferences.

In five to ten years global changes in demographics (35% growth of the +65y population), in the job market (instability, the constant need for professional improvement, career shifts) and disruptive digital technologies, accessible through mobile devices, will demand and promote more flexible, engaged and interactive learning experiences. Student-centered learning will also mean game-based and simulation-based learning, augmented reality (contextualization), virtual reality (personalization), m-learning, cognitive learning, micro-learning, high-velocity training, training through problem-discovery.

When confronting the structure, functionality, overall presentation and delivery model of the two fashion design programs offered online it became evident their distance from the digital, connected, flexible, mobile, collaborative, user-centered global scenario. The journey and the process are not straightforward, logical or quick and the interaction touchpoints, like links (repeated or deficient), buttons, search tools (non-existent or inefficient), the travel between screens, or the visual inconsistency, do not facilitate the information access and do not promote interaction or a smooth experience. The platforms are structured to support the physical campus, classes, and contacts, they are presented mainly in Italian, and the language options are not transversal to the whole content. This practice goes against English as the #1 of the ‘most common languages for web content’ ([3]). Both platforms present static pages, with large texts and links that open more static pages with more texts, and the Fashion Design curriculum does not informs about the adopted syllabus of learning unit per academic year (e.g., 2017/2018 or 2018/2019). Specific lectures and final exams are structured in the traditional face-to-face model, in one of their physical campuses and following a fixed calendar. The social media presence is
irrelevant or nearly non-existent, and it is a transposition from the desktop version, there is no space for engaged or interactive experiences. UT San Raffaele di Roma has 8.582 followers on Facebook, 147 on Twitter and 860 in Instagram and UT eCampus has 46.521 followers on Facebook, 1.954 in Instagram and 432 Youtube subscribers. UT eCampus app in Google Play has four users and a review of 1.5. UT San Raffaele di Roma does not have an app in Google Play.

3.1. Fashion design learning recommendations based on fashion design learning and heutagogical principles.

Digital connectivity, population aging, fewer jobs ([18], [19], [20]) are promoting the demand for self-improvement and a desire to keep learning, in a lifelong perspective. Under these circumstances, the learning experience must be accessible, flexible, mobile and integrated through different channels. In collaborative online learning environments, fashion design can harness deeper reflective thinking, while doing, mixing craftsmanship and technology. 3D design and printing, for instance, are possible ways to develop, evaluate, adapt concepts and ideas while prototyping, allowing the learner to reflect creatively upon his/her process. Fashion design learners could even share their proposals with colleagues and potential consumers, receiving feedback and learning to create collaboratively.

Especially in the fashion sector, production has reached the full potential globally, placing ‘new designs’ available to consumers in a few weeks. Fashion ‘fast’ and soulless cycle of change ruined Fashion’s characteristics: originality, creativity, and fun. Ironically, digital technology, AI, VR, simulation, gaming can potentially promote research and interpretation in a more human approach to fashion design. They can ‘zoom in’ products, materials, people stories, diversity, intriguing imperfections, and singularities. Those technologies can potentially prompt fashion design learners to ‘navigate’ into an otherwise hidden world of textile fibers, a garment origin, product design and manufacture process and know more about the people who produce the clothes in different countries, their history, their culture, their knowledge. This path will create a sense of connectivity, purpose, and relevance that will impact fashion designers understanding about what Fashion is and their role in it. It a learning process focused on fashion products as a part of a global system formed by multiple perspectives, knowledge, and experiences ([8]).

The social network global expansion and penetration, as well as users high adoption, harnessed by digital tools and services promotes a collaborative and shared behavior, in which creativity and imagination are not individually make, but shared and explored together ([3], [8], [18], [19], [21]). However, what capacities a fashion designer is learning currently in order to create spaces, moments of co-creation, cooperation with their future consumers? Are they learning to develop fashion collections based on collective inspirations? Fashion design collaborative online learning should happen within a community of shared values and multiple viewpoints, so the learner acknowledges the contribution of colleagues and understands Fashion Design from a participatory model perspective.

The development of DNA, data science, and analytics as economic forces behind industries, systems, and processes will potentially change collaboration and communication within the fashion supply chain and the product life-cycle. This will impact one of Fashion’s principles - planned obsolescence, since revive, redesign, extends a fashion product durability and reintroduction into the productive process. Fashion designers must understand materials, processes, and creation from both a molecular and systemic perspective. A much more efficient approach to fashion supply chain and fashion design is created since products will be developed to small segments instead of being stocked, and it will alter fashion traditional segmentation process. Fashion designers, resorting to ‘emotional data analytics’ technologies ([8]), should be learning to identify personal tastes and improve product design by knowing the full (re)living potential of a product or a collection.

Globalization and worldwide internet penetration also brought complexity and uncertainty, mistrust, misinformation. Under this intricated scenario, it is necessary to develop multiple perspectives and rely on trustworthy sources. We seek globally for information, but we validate it with our community, locally. Online social platforms are built around shared values, reliance, clarity. Especially in the case of fashion sector, which supply chain suffers from lack of transparency and trust, digital connectivity
can potentially be employed to disclose fashion activities and create a much more aware and reliable community of fashion creators, consumers, and learners. Fashion design learning is to be structured around collaborative online environments, where connections and interactions are stimulated, and small (micro) networks or communities are created to contribute for knowledge and learning through the transference of their experiences, preferences and ideals in a personal and more meaningful level.

4. Conclusion
Technology quick changes are affecting perspectives on consumption, work, and education globally. AI, VR, 3D, 5G technologies will increase internet integration, prompt more flexible, mobile, social, collaborative business models, and change behavior patterns in different sectors, including in fashion and fashion education. It is necessary, then to regard fashion design learning under a holistic approach in which fashion designers, fashion consumers, fashion learners belong to a community connected researching, sharing, creating, buying, blogging, following, promoting, reviewing fashion, using a variety of apps, web services, and social platforms, enjoying the integration between physical and online channels. Confronting the data collected about foreseeing changes in the next five to ten years with data about fashion design higher education in Europe, it became clear that the education sector is missing the technological ubiquity and mobility, the flexibility and collaborative scenarios, the innovation and personalization of learning, the mixed role of the designer-consumer-learner altogether. Despite fashion figures among the most significant eCommerce segments worldwide, with an active and interactive presence of fashion brands, professionals, consumers and indeed students, the online, mobile, digital, innovative offer in fashion design higher education in Europe is limited, non-existent, or the ones existent are merely transpositions of the traditional ‘onsite’, lecture-based education models. There is a constant resistance to consider alternative routes for fashion design higher education, especially in online, collaborative, innovative, digitally immersed settings. This resistance is coherent if we choose to hold on to the traditional roles of the fashion designer, to traditional manners of creating, manufacturing and selling fashion, to traditional ways of communicating and interacting with the fashion consumer. A new generation of fashion designers will relate and interact with their sector differently, so they will demand new ways of learning. Therefore, this paper intended to collaborate to present possible, but certainly not unique, educational pathways.

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