

Digital Fashion Competences: A Longitudinal Study



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Abstract The fashion field is undergoing a period of digital transformation, further accelerated by the Covid19 pandemic. The evolution of digital fashion foresees a change in the required skills and competences, which should be mastered by employees of the sector. Moreover, the dynamicity of digital fashion also implies the need to constantly update academic curricula, which should be able to form the employees who will be entering the digital fashion job market.

The research objectives of this study are twofold. Firstly, research the skills and competences needed in the current digital fashion market in order to identify whether there are any salient differences from a similar study conducted in 2017 by Kalbaska and Cantoni (Business models and ICT technologies for the fashion supply Chain. IT4Fashion 2017. Lecture notes in electrical engineering. Cham: Springer, 2019). Secondly, conduct such analysis during the Covid19 pandemic, a unique period for the job market, which has experienced major cuts also in human resources, while at the same time a dramatic increase of digital activities has been seen (e.g., eCommerce). To reach such goals, a study has been conducted on LinkedIn, a professional social network, from May 19, 2020, to June 2, 2020, to identify the number and the type of job listings, and the most required skills in the digital fashion domain in the EU and Switzerland.

Keywords Digital fashion · Digital transformation · Skills and competences · Fashion curricula

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1 Introduction

The fashion industry is being impacted by technology advances. Digitalization is transforming the whole industry, from the way in which products are being produced to the communication between retailers and consumers and individuals' shopping habits [1]. Hence, digitalization implies the need to conduct further research on the entire ecosystem of the fashion field [2–4].

Fashion should be about innovations and trends, yet fashion brands have not been at the forefront of digital innovations, with the exception of few disruptive fashion brands [4]. However, the Covid19 pandemic has strongly affected the fashion industry and accelerated the digital transformation that companies have been reluctant to embrace. Due to social distancing, digital channels have gained high importance, and fashion companies have had to drastically rethink their business, embrace new channels, and respond to consumers' changing habits by identifying alternative solutions to the existing ways of operating [5].

To survive this crisis, companies will need to adapt quickly. The digital capabilities will continue to impact individuals' daily lives; hence companies are required to strengthen their digital potential as when this crisis will be over, the fashion industry will have to continue facing a time of changes. To face such complex time, fashion companies must be ready to strategically redefine their business model across the whole value chain. To do so, companies must have a workforce with the appropriate skills and competences to embrace the digital transformation [6].

Additionally, recent studies are acknowledging the lack of integration between students' learning in higher education and the job market. To fill this gap and to form the employees of the future, academic curricula that take into consideration the evolving industry requirements are necessary [7, 8]. Graduates are entering an extremely difficult and unpredictable job market. Moreover, due to the reduction of internships and new/entry level jobs, the competition to find a job opportunity is high. Therefore, equipping them with the relevant skills is crucial.

This study aims to gain a comprehensive overview of the skills and competences needed in the current digital fashion environment and identify how the digital fashion job market is changing through a longitudinal study. To do so, it continues the study by Kalbaska and Cantoni [9], who researched the digital fashion domain in 2017. Details regarding the way in which the study was conducted are discussed in the methodology section. The longitudinal approach is expected to provide insightful conclusions on whether there are any changes from the year 2017 to the year 2020 in which this study has been carried out. Moreover, this study is executed during a unique period, when the whole world is facing a pandemic, adding one more reason of interest to it.

2 Literature Review

Digitalization is having a big impact on the fashion industry. This process is altering and advancing fashion business models and formats, the channels utilized to communicate with consumers, and the customer journey touchpoints [10]. Indeed, fashion is shown to be a rich field, and its interplay with Information and Communication Technologies (ICTs) and digital media happens on different levels. Digitalization is impacting not only the design and production processes adopted by fashion firms but also the way in which retailers communicate with consumers and market their products. These changes are having an impact on the whole society, including education.

The growing importance of digital fashion is also supported by scholars' interest in the digital fashion domain and an increased number of publications on digital fashion from the 1950s till 2019 [1].

This study aims to contribute to the ongoing research in the context of fashion transformation by discussing the impact of digitalization on the job skills and competences required by the industry. Additionally, it addresses the importance of identifying the relevance of skills and competences also for the development of academic curricula.

2.1 *Digitalization: Job Skills and Competences*

The digital transformation of a business involves a deep transformation of its activities, processes, and competences [11]. Adapting to the digital changes and integrating a new technology within a business involve both possibilities and challenges. To face such complexity, retailers need on one hand advanced IT infrastructures to conduct their activities and to provide the services to consumers, and on the other hand they must have employees with the appropriate skills and competences to implement these innovations within the business [12, 13].

Skills are a specialized knowledge that enable the creation of products/services and the manipulation of processes and people [11]. Due to digital advances, the routine jobs are increasingly being performed by robots. Employees should focus on developing those skills necessary for nonroutine jobs. The literature has identified some generic skills, which are crucial for completing various tasks in the digital context, including information, communication, collaboration, critical thinking, creativity, and problem-solving skills [14]. Similar skills are also identified to be relevant in the fashion field in the study by Kalbaska and Cantoni [9]. Indeed, the communication skills are among the top skills also for fashion employees [9]. Communication digital skills are defined by van Laar et al. [14: 94] as the ability "to transmit information online and reflect upon the best way to present this information to a particular audience" and they can be of various types. Fashion firms utilize different types of digital media to interact with consumers. Hence, the communication skills of content sharing and creation are important. ICTs provide employees

with innovative solutions to do so creatively, which is essential in such a competitive market [1–16]. Furthermore, the categories identified by van Laar et al. [14] of problem-solving skills and critical-thinking skills, which involve the ability of analyzing a problem and making informed decisions based on evidences, are also crucial within the digital fashion domain, reflected in the data-related skills such as web analytics and analytical skills identified by Kalbaska and Cantoni [9].

The rapid evolution of technologies implies that the skills and competences across the whole supply chain should be constantly updated [12]. To date, however, research has paid limited attention to the skills needed by employees in the digital fashion environment [2]; hence, this research aims to address this gap.

2.2 *Digitalization: Fashion Curricula*

Research on the skills and competences in digital fashion is expected to be relevant also for the development of academic curricula that take into consideration the integration of fashion with ICTs [1–9, 13]. University programs sometimes are criticized for being irrelevant for the market needs and not being able to prepare students for the relevant job markets. Traditional teaching methods, which focus on developing students' academic skills, are definitely important; yet they do not always fully prepare students for the job market [16].

Since the beginning of the twenty-first century, the integration of technologies within learning has become object of study. Graduates need to be equipped with relevant digital skills to enter the job market. Hence, an active use of technologies within the educational journey, such as mobile applications, augmented reality, and social media channels, can be crucial to prepare students to the complexities of the job market [17]. For example, within the fashion field, the study by Son et al. [18] has developed an interactive learning curriculum for the apparel design and merchandising subject using social media channels. Some of the positive aspects derived from the integration of such channels in the curriculum are higher understanding of the topics, enhanced critical thinking, application of knowledge, and technology skills.

The Covid19 pandemic, which forced many classes to be conducted partially or fully online due to social distancing regulations, stressed the importance of students' curricula that are able to satisfy the evolving market needs. Curricula should be re-evaluated to be relevant for students' post-graduation [19]. Research on digital fashion curricula is still limited to our knowledge, while it is one of the key research topics and key emerging trends identified and presented in the Fashion Communication research Manifesto, developed during FACTUM 19 Conference [2]. Moreover, as mentioned above, the fashion industry is rapidly changing. Hence, this study aims to address the lack of research in digital fashion curricula by providing an analysis of the job roles and skills currently required in digital fashion and that should be integrated in the fashion curricula.

The following section provides details regarding the methodology adopted in order to collect the data.

3 Methodology

For the purpose of this study, a longitudinal research was chosen. In this type of research, data is collected from one or more variables of the same object of study for two or more periods. Thus, it is possible to compare the results of the different periods, identifying the main changes occurred and the possible causes [20].

Job postings related to the digital fashion market were collected on LinkedIn. The social network serves as a worldwide job market with its 675 million members [21], and no other social network for professionals has had the same impact [22]. Job vacancies posted on LinkedIn receive more potential candidates than on networks like Facebook or Twitter together [23], making it a worldwide known platform for increasing employability [22]. The nature of LinkedIn makes it possible for recruiters to identify potential talents and attract them to job openings. As a social network, the access to a large number of professionals in real-time makes LinkedIn widely used by companies and Human Resources professionals to increase the quality of their selection processes [23, 24].

For data collection, an automated web scraping tool called WebHarvy was used. The web scraping tool collects unstructured data available on websites, transforming it into a structured and manageable database [25, 26]. Websites can be described as content pages in digital format, composed of data such as texts, videos, and photos [27]. Websites usually have similar templates to each other, disseminating information similarly in the architecture of each page. Thus, the web scraping tool collects the selected information from a specific page and replicates the process to the other pages, creating an organized database [28].

The web scraping tool was used from 19.05.2020 to 02.06.2020. The steps for conducting data collection and standardizing the analysis followed the methodology described by Kalbaska and Cantoni [9]. For each job posting, the following data were collected: job title, company name, location, publication date of the advertisement, job description, and the industry the job belongs to. Posts from 29 countries (European Union and Switzerland) in English were selected. Besides, the search was limited to the following industries: Apparel and Fashion, Internet, Luxury Goods and Jewellery, Marketing and Advertising, Retail, Textile, and Design.

The following keywords were used for the search of the postings: 3D, Augmented Reality, CRM, Digital Communication, Digital Content, Digital Fashion, Digital Marketing, Digital Media, Digital Transformation, eCommerce, eLearning, Fashion IT, Forecasting, Influencer Marketing, Localization, Personalization, SEO/SEM, Social Media, Trade Marketing, Usability, User Experience, Visual Merchandising, and Web Analytics. From these filters, data from 10,116 job postings was collected.

In the data-cleaning phase, job postings that did not contain the word “fashion” in the job title or in the job description were removed. Moreover, duplicate job postings were eliminated. Subsequently, job postings with the word “fashion” only in the job description were manually analyzed for relevancy.

Following the data-cleaning phase, the final database consisted of 1397 job postings. Quantitative content analysis of job titles and job descriptions was performed using WordSmith Tool 6.

4 Results and Discussion

The presentation and discussion of results is structured as follows: firstly, it discusses the job positions which emerged in digital fashion, and then it analyzes the job titles and descriptions to identify the relevant competences and skills. In order to identify whether there are any evolutions in the digital fashion job market and the impact of Covid19 on the market, the data is compared with the set of data of 2017 by Kalbaska and Cantoni [9].

4.1 Job Positions in Digital Fashion

The number of job positions identified in this study is 1397 (Table 1), compared to 1427 in 2017. Despite the apparent small decrease in the number of listings in 2020, it should be considered that the collection of the data set was conducted between the end of May and beginning of June (19.05.2020 to 02.06.2020). A period when the whole world was being affected by the Covid19 pandemic and most countries were experiencing the first lockdown and its drastic consequences on the global economy. Arguably, considering the market situation, the number of job listings identified in 2020 is high, and it symbolizes the growing importance of digital fashion within the job market, suggesting that fashion companies were intensifying their online activities also encouraged by the social distancing requirements imposed by the pandemic.

The hubs of digital fashion across the years remain the United Kingdom and Germany. However, the number of countries in which job listings are identified increased between the two studies, with job listing identified in 17 countries in 2017 and in 26 countries in 2020, showing that the relevance of digital fashion is spreading across countries.

4.2 Job Titles and Skills in Job Descriptions

The most frequent combinations of keywords found in digital fashion job titles (Table 2) were “marketing specialist” and “ecommerce specialist.” The first two positions in 2017 were occupied respectively by “digital marketing” and “social media,” whereas in 2020 “social media” slipped in sixth position and eCommerce roles grew of importance. Consumers’ shift to online shopping for fashion products

Table 1 Number of digital fashion jobs available on LinkedIn from May to June 2020

Countries	Frequencies
Austria	11
Belgium	34
Bulgaria	1
Croatia	1
Czech Republic	2
Denmark	12
Estonia	1
Finland	10
France	44
Germany	203
Greece	5
Hungary	6
Ireland	17
Italy	86
Lithuania	6
Luxembourg	3
Netherlands	85
Poland	17
Portugal	67
Romania	5
Slovakia	2
Slovenia	1
Spain	44
Sweden	23
Switzerland	82
United Kingdom	629
Total	1397

is expected to continue growing, accelerated by the Covid19 pandemic which anticipates consumers’ increase spending on online channels [29]. Arguably, when referring to eCommerce, other skills might also be implied, as other channels such as social media or voice search are also being adopted for eCommerce purposes beyond traditional websites [30, 31].

The other sets of data analyzed provide an overview of the combinations of the most frequent keywords in the digital fashion job descriptions (Table 3). Overall, the keywords identified across the two studies appear to be very similar, with some exceptions.

The most mentioned keyword combination is that of “luxury fashion.” This could be as the luxury sector is unique for some aspects [32]; hence it requires particular attention. On the other hand, in the study by Kalbaska and Cantoni [9], the most mentioned skill is that of “social media.” Arguably, this result does not indicate a reduction in the importance of social media skills but an increase in the number of other skills required in digital fashion. Moreover, another possible explanation is that

Table 2 Top 20 fashion job titles

Keywords combinations	#
Marketing specialist	48
Ecommerce specialist	47
Visual associate	44
Content writer	43
Product manager	41
Social media	40
Influencer marketing	38
Customer service	30
Store manager	28
Account manager	25
Business developer	20
Graphic designer	20
Service assistance	14
Visual merchandising	13
Operations associate	13
Campaign manager	13
Sales management	8
Fashion assistant	7
Media executive	7
Digital analyst	5

Table 3 Top 20 digital fashion skills and competences in job descriptions

Keywords combinations	#
Luxury fashion	737
Customer service/care	692
Communication skills	520
Written communication	494
Digital marketing	406
Team player	397
Verbal communication	377
Customer experience	338
Analytical skills/Google analytics	236
Time management	225
Visual merchandising	218
Problem-solving	216
Project management	177
Work independently	156
Fashion industry	149
Management skills	142
International team	125
Flexible working	119
Paid social	102
Fashion trends	99

for fashion firms, social media skills are now considered an essential prerequisite and therefore less relevant to highlight in job listings.

Extremely interesting is the importance of “customer service/care” skills in both sets of data. According to the literature, the role of technology in providing services is evolving as it enables to provide better services by facilitating the interaction between employees and customers [33]. Moreover, consumers interact with multiple channels and devices in their shopping activities; hence in the omnichannel retailing experience, which “is geared towards serving customers when and how they want” [15: 471], customer service skills are fundamental.

Soft skills are extremely important in fashion. Communication skills remain among the top skills needed in fashion. Digital channels have enhanced communication abilities and the possibilities to connect, yet in a market characterized by information overload, attracting consumers’ attention is a major challenge, to be addressed with adequate knowledge and skills. Communication skills, both oral and written, enable effective communication among employees and with customers. Fashion firms are constantly searching for ways to connect to individuals’ emotions and feelings through their communication activities. A growing trend is that of providing personalized messages to individuals through different channels in order to attract consumers’ attention and build a relationship with each individual [3]. Hence, excellent communication skills that are able to reach individuals’ emotions are of crucial importance [33]. In the 2017 data set, other skills that are connected to communication skills, such as the ability of creating marketing campaigns, email marketing, and digital content creation emerged to be important. Interestingly, such skills were not identified among the top skills in the 2020 data set. However, traditional communication tools such as email marketing are still widely adopted by fashion retailers [34]. Arguably, as previously mentioned, even though the skills expected by digital fashion experts evolve with new technologies, it should not be concluded that traditional skills lose their relevancy. Other soft skills, such as being a team player, being part of an international team, and also being able to work independently, solve problems, and manage time, are required.

In addition to soft skills, employees in fashion should also have analytical and data skills. Arguably, it is because the traditional skills of the fashion industry are being impacted by data skills. Analytical skills appear in both studies, implying that the ability of understanding, analyzing, and interpreting data is an essential skill. As consumer online shopping habits are expected to continue growing beyond the pandemic, brands will have access to a large amount of data. Moreover, data is impacting other skills, such as the ability of identifying fashion trends. In fact, data can have many purposes within the fashion industry, as it enables to understand consumer behavior, make predictions, and forecast trends [35]. Hence, firms need employees able to both analyze and interpret the data in a way that can be utilized for strategic decisions in such a dynamic environment.

Finally, skills specific to different emerging technologies, such as augmented reality and 3D printing, do not emerge from the studies, although in the most recent research they were inserted as keywords on LinkedIn. 3D design is an interesting method to experiment with, and there is already the equipment at disposal to

implement it, yet it is still at its infancy in the fashion industry [5]. However, “customer experience skills” appear to be relevant in digital fashion, and retailers are relying on technological advancements such as 3D, VR, and AR to develop and offer user experiences. Hence, skills relevant for new technological advances are expected to become more important in the coming years.

5 Conclusion, Limitations, and Future Research

The digital fashion domain is evolving, gaining importance across countries. This study addresses the suggestion by Kalbaska and Cantoni [9] of a longitudinal study to capture the evolution of the field in terms of the skills and competences required by employees. The number of job listings has substantially remained stable from 2017 to 2020, showing that it was not highly affected by the Covid19 pandemic. Furthermore, it emerges that employees wishing to work in the field should have a wide range of skills, from soft communication skills to operational skills. The results of the studies also imply the need to develop updated fashion curricula that consider the integration of fashion with ICTs to prepare students to the competitive and dynamic fashion job market.

It will be interesting to continue researching how the fashion job market will evolve, including the demand of digital fashion positions and the related skills. After the Covid19 pandemic, the digital fashion market is expected to continue its growth; hence further research will enable to capture its evolution in the years to come. Moreover, further research could analyze existing curricula and consider how they could be implemented to address the needs of the evolving field.

Limitations of the study should be addressed in future research. Firstly, the data was collected on a single platform LinkedIn; hence future research could consider also other platforms. Moreover, only the positions in English language were analyzed. This could provide bias results in the number of job listings in other countries. Hence, future research could take into consideration job listings in other languages and other countries.

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