Promoting innovation in the fashion industry to support active ageing: can independent European centres take the leadership?[1]

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Abstract

Purpose of the paper: *The aim of the paper is to identify how many independent innovation centres are working in the fashion field at European level, their contribution to innovation in the sector and how they consider the needs of the elderly.*

Methodology*: The empirical analysis uses a mixed method that combines a desk analysis of the websites of European independent innovation centres with a qualitative survey with open-ended questions and in-depth interviews with experts.*

Findings*: On the one hand the analysis highlights that independent centres in the fashion and textile field are involved in multiple activities targeting social inclusion-oriented innovation but on the other hand only a few consider the over-65 population as a specific target. The findings highlight the potential of applying skills and innovations in this segment that have already been tested in other social areas and for other creative industries.*

Research limits: *The research only investigates independent innovation centres. Future research developments could usefully examine and complete the panorama with the large fashion companies and the businesses that operate in market segments whose products have technical features that could be easily transferred to the silver market.*

Practical implications: *The study highlights the potential of the silver market for fashion and suggests practical implications for independent innovation centres as regards encouraging greater attention to and the development of activities and products that are specifically dedicated to this target.*

Originality of the paper*: Despite the relevance for the fashion industry of the European over-65 market, so far the literature has shown little interest in the fashion silver economy as regards analysing both demand needs and product innovation processes aimed at satisfying these needs, with reference to the places where such innovation processes can more easily take place.*

Key words: fashion; textile; active ageing; independent innovation; silver market

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1. Introduction

There are important creative and innovative trends in fashion today which offer unprecedented opportunities in terms of product innovation and mass customization (Behr, 2018). These trends come not only from research within companies but, more and more, also from independent innovation hubs which are more easily in contact with the social needs expressed by demand (Lushan and Li, 2018), and that are able to integrate current technological advances in the fashion system (Manenti, 2016).

The relationship between fashion and technology has become stronger and stronger in recent years also thanks to the experiments carried out in many of these independent centres, contributing to the transformation of many fashion goods into technological products. The functions of clothing have thus evolved from the protection of the body and from aesthetics to advanced functions such as delivering information, releasing therapies, supporting movements, producing energy, and many others (Bertola and Teunissen, 2018). These functions play an increasingly important role in the well-being and safety of more and more customers: athletes, the ill, workers, seniors and many others (Tomico *et al.*, 2017). In this context it is particularly interesting to look at the seniors market look, also due to its growing size.

This because, if on the one hand the fashion industry can offer new answers on how not only to live longer but also in a healthier way, on the other hand studies highlight both the enormous potential for the European fashion industry of older consumers, and the risks for the sector in neglecting this segment (CBI, 2019).

Surveys of the demographic picture in the EU indicate a continuous and sustained trend towards an aging population. The most recent statistics (2019, Eurostat 2021) show that more than one fifth of the population in EU-27 member countries is aged 65 or more, while young people up to 14 make up around 15%. With life expectancy increasing at a similar pace in all European countries, a further significant factor to consider is the progressive aging of the elderly population: the 80-plus age group is growing faster than any other age group in the European population.

Population aging will therefore have a growing impact on many sectors of the EU economy (Guido, Ugolini and Sestino, 2022), and technological innovations will play a fundamental role in defining the prospects for the "silver market" phenomenon (Kohlbacher and Herstatt, 2011).

With specific reference to the fashion market, research in the UK from the International Longevity Centre (ILCa, 2019) shows that spending by seniors on clothing and footwear will increase by 11 billion pounds (60%) from 2019 to 2040; also in other countries, such as Italy for example, the over 65s are driving the growing expenditure in the fashion and cosmetics sectors (Assolombarda, 2017).

However, while many sectors have invested heavily in research and development in order to find innovative solutions to meet the new needs of an aging society - as in the case of e-health (Kampmeijer *et al.*, 2016), of the automotive sector (Faber and van Lierop, 2020), home automation (Pal *et al.*, 2018), tourism (Vigolo, 2017 *et al.*), communications and many

others (Technopolis group, 2018) - the fashion industry has fallen seriously behind on this front (ILCb, 2019).

Therefore, considering that an important part of innovation in the fashion industry today comes from independent centres and from the co-creation processes that take place here (Mizuno, 2014b; Townsend et. al, 2019), and that the senior market represents an increasingly relevant target in terms both of size and needs, this study aims to contribute to existing innovation management studies by investigating if and how European independent innovation centres are contributing to filling the gap in responding to the needs of the silver market.

Looking at activities carried out in more than 350 independent innovation centres in thirteen European countries, the paper analyses (i) where and how the main innovations in the field of textiles and fashion take place; and (ii) to what extent and how these innovations are also aimed at users over 65.

The paper is structured as follows. The theoretical background of this study is presented in section two, highlighting the research questions that will be addressed in the empirical analysis. The methodology used to conduct the analysis is described in section three, while the results are presented in section four. Finally, the theoretical and managerial implications are discussed in the last paragraph which also looks at the limitations of this study.

2. Theoretical background

The field of fashion is full of creative and innovative trends, involving changes in business models, new communication strategies, emerging patterns of consumption and new production techniques and materials that offer unprecedented opportunities in terms of mass customization (Akram *et al.*, 2022; Braglia *et al.*, 2020; Behr, 2018). These new trends are mainly the result of integration between the fashion system and current technological advances: fashion is a sector that is profoundly transformed from the inside out by technology (Manenti, 2016). Technology and fashion have become an indissoluble couple.

On the one hand, as widely reported in the literature, technology has a high influence on textile production and packaging, communication, and distribution, transforming the entire production and distribution process (Mizuno, 2014a; *et al.*). For example, AI is used today in the collection and analysis of consumer and market data to predict fashion trends (Banica and Hagiu, 2016; Zhu *et al.*, 2018), 3D rendering is becoming a tool used in the presentation and pre-sale of products (Arribas *et al.* 2018), while blockchain technology is used for increasing sustainability in supply chain management (Oguntegbe, *et al.*, 2021).

Technological research is also increasingly focusing on innovative materials and production processes (e.g. sustainable raw materials, zero waste, wearable technology, etc.) to pursue the lower environmental impact of the fashion industry (e.g. upcycling, recycling, "vegan"; CSR and vertical integration, fair trade, local procurement, collaborative consumption,

second hand, etc.), and to improve the wellbeing of customers through so-called "smart clothing" (Bertola and Teunissen, 2018; Akram *et al.*, 2022). Important innovations in fashion have been achieved thanks to 3D printing too (Sun and Zhao, 2017; Vanderploeg *et al.*, 2017).

Research shows that in many cases it is the MSEs that break the rules of the traditional business model that leads to fast-fashion, instead pursuing multi-stakeholder collaborations that enable and promote innovation (Todeschini *et al.*, 2017): the fashion sector is in fact a highly fragmented and globalized one (Choi, 2018), with the 10 largest brands and retailers detaining a global market share of 10% (Statista, 2019), and a myriad of small and medium-sized enterprises involved along the entire chain of value.

Furthermore, in fashion as well as in other sectors, a number of new actors with a strong potential for innovation have emerged: these actors - innovation centres, fablabs and creative spaces - are increasingly taking the lead in open innovation processes and in reshaping the traditional production flow (Buchel *et al.*, 2018; Lushan and Li, 2018; Buchel *et al.* 2022). This is also because of their ability to sustain a much more intimate relationship with demand and to engage future users directly in design and production processes (Mortara and Parisot, 2016; Giusti *et al.*, 2020).

In the European fashion and textile sector, therefore, innovation is increasingly generated not only by the traditional training and production places but also by multiple and different structures that can support the transformations in the sector through the promotion of new entrepreneurial actors and production modes (Lin, 2018; Brydges at al., 2014; Lavanga, 2019; Friel and Borrione, 2020).

The synergies that these actors can activate between new technologies and textiles/clothing design and production offer unprecedented opportunities for increasing the level of product customization, and for responding to trends in consumer roles and expectations (Buchel *et al.*, 2018), also with regard to specific psycho-physical needs.

However, despite the growing attention in academic literature both to the technological innovation processes underway in the fashion industry and to the contribution given by independent innovation centres to these innovative processes, no studies have specifically addressed the issue of fashion innovation for the silver market. This despite the fact that today seniors make up one of the most interesting markets for the new fashion technologies to address, both because of the dimension of this market, and of the kind of needs it expresses and that make it an ideal laboratory for experimenting and co-creating new products (McCann, 2016).

Scholars have analysed the clothing preferences of the elderly (Rocha, Hammond and Hawkins, 2005) and their shopping behaviours (Thomas and Peters, 2009; Yu and Rahman, 2018; Ghal and Lee, 2016). On the supply side, research has focused on fashion brand communication strategies targeted at seniors (Bøilerehauge and Jørgensen, 2019; Farinosi, 2022). However, little attention has been paid in the literature to analysing how innovation paths in the fashion industry can lead to new and suitable products and processes for the elderly, and to collaboration actions with users at the basis of such processes (Townsend *et al.*, 2019).

Moreover, McCann has observed how "the requirements of the so-called new old can be addressed by involving all the stakeholders in a relatively slower and more responsible collaborative process", to "interrupt" business as usual, "perpetuated mainly through feedback from youth-oriented fashion trends" (McCann, 2016, p.235).

In activating this collaborative process, independent innovation centres can play a particularly important role because by vocation they are able to sustain a much more direct relationship with demand, and to activate participatory design and production processes (Ghala and Lee, 2016).

However, how much of the innovation taking place in independent research centres concerns the production of technological innovation for the benefit of the elderly still remains an aspect that is largely neglected by management literature.

This study therefore intends to contribute to the academic debate by analysing (i) how many and which independent innovation centres in Europe are active in the field of fashion; and (ii) to what extent and how these independent innovation centres also take care of the elderly.

Identifying and studying how innovation paths in the fashion sector can lead to new products and processes suitable for the elderly and analysing where these innovation paths take place is in fact of capital importance if we are to support these innovative processes with adequate strategies and policies.

3. Methodology

To try and give an answer to the research questions, the empirical analysis used a mixed method combining a desk analysis of the websites of European independent innovation centres with a qualitative survey with open-ended questions, and in-depth interviews with experts.

A first phase of the research aimed at mapping the main independent innovation centres in Europe that are active in the cultural and creative industries (CCIs), and then at understanding how many of them are dealing with innovation in fashion.

The goal of the second phase of the research was investigating how many of the centres that deal with innovation in the fashion field also operate with specific reference to the needs of the elderly.

A desk analysis was first carried out to map the independent innovation centres in order to build a database of makerspaces and incubators dedicated to technological innovation and digital manufacturing for the cultural and creative sectors, with a particular focus on those active in fashion and textiles.

The starting point for the mapping process was the FabLab Global Network database with the addition then of European makerspaces, including university incubators that had CCIs and fashion as their focus.

The cultural and creative sectors considered for the mapping were the following:

- Cultural Heritage and Entertainment: Museums, Monuments, Archives and Libraries, Contemporary Art and Architecture, Music and Live Entertainment;

- Content Industry: Publishing, TV and Radio, Cinema, Software and Advertising;
- Material Culture: Fashion, Design, Crafts and the Taste industry;
- Cultural tourism.

The data collected covered the following European countries: Austria, Belgium, France, Germany, Ireland, Italy, Poland, Romania, Switzerland, The Netherlands, Portugal, Spain, the United Kingdom. These countries were selected given their high production of textiles and fashion goods according to Eurostat (2018 data).

A desk analysis of the websites of the mapped centres was then carried out to identify and to include in the database the activities implemented by the centres in the previous three years. The activities were categorized by type, number, sector of reference, target, and frequency.

The questions on which the database was built were the following. Questions 13-17 were specifically intended to find out how creative innovation centres address the senior target, an aspect that in general has been a particularly hard to discover.

- Question 1: European country in which the centre is located;
- Question 2 and 3: municipality where the centre is located and postcode of the municipality;
- Question 4 and 5: name of the incubator / centre and website;
- Question 6: network to which the centre belongs;
- Question 7: Does the incubator offer activities or events related to one of the creative and cultural sectors?
- Question 8: Is there any digital manufacturing machinery available?
- Question 9: If production machinery is available, who can use it?
- Question 10: For which creative and cultural sectors has the incubator offered training courses over the last year (January-December 2019)?
- Question 11: If in the months of January-December 2019 the centre offered training courses in the fashion and textile sectors, how many were there?
- Question 12: Does the centre provide support for business development?
- Question 13: What kind of support for business development does the centre offer?
- Question 14: Does the centre host activities for the elderly population?
- Question 15: If the centre hosts activities for the elderly population, which activities are they?
- Question 16: Does the centre promote initiatives for the design and production of products for the elderly?
- Question 17: If the centre promotes the design and production of products for the elderly in the fashion and textile sector, what type are they?
- Question 18: Does the centre promote activities, productions or events that link design with social impact?
- Question 19: What activities, productions or events that link design with social impact are promoted by the centre?

This analysis was conducted in 2020 and was accompanied by a questionnaire sent to the directors of those centres for which information available online was missing, incomplete or outdated. The questions

addressed to directors in the questionnaire were identical to those used for the desk analysis.

As a result, a total of 357 active independent centres - active across different sectors - were mapped. Almost half of the mapped centres are geographically located in large cities, but a fair number of centres were also established and are currently active in smaller towns and villages (Table 1).

After the desk analysis, in-depths interviews were then conducted with 12 fashion experts and managers/entrepreneurs of innovative makerspaces that work on active ageing. The interviews were carried out from October 2020 to February 2021.

Tab. 1: Distribution of mapped centres in relation to city dimension[2], total number of centres per country and % of centres active in fashion and textile fields for each country

Country	Capital	Large	Medium	Small	Village	Total Centres per Country	% Over total
Austria	7	5	2	5	2	21	5.9%
Belgium	7	9	7	2	1	26	7.3%
France	4	16	2	4	11	37	10.4%
Germany	9	36	9	4	2	60	16.8%
Ireland	1	0	1	1	3	6	1.7%
Italy	3	28	12	12	9	64	17.9%
Netherlands	4	13	2	2	3	24	6.7%
Poland	4	5	0	0	0	9	2.5%
Portugal	4	3	1	5	2	15	4.2%
Romania	1	3	0	0	0	4	1.1%
Spain	6	23	0	1	0	30	8.4%
Switzerland	1	4	1	7	5	18	5.0%
United Kingdom	8	29	4	0	2	43	12.0%
TOTAL	59	174	41	43	40	357	100%
%TOTAL	16.5%	48.7%	11.5%	12.0%	11.2%	100%	

Source: our elaboration

4. Findings

4.1 European independent innovation hubs for fashion and textiles

Of the 357 independent innovation hubs, 132 are currently active in the fashion and textile field (around 37% of the total). Table 2 summarizes the number of fashion and textile centres per country and their weight on the total amount of mapped centres in the European area of reference, as well as the percentage of the total centres active in that country.

[2] The distribution among cities and urban centres was assessed considering large cities with a minimum of 100,000 residents; medium cities between 50,000 and 100,000 residents; small cities between 20,000 and 50,000 residents; villages under 20.000 residents.

The countries with the highest number of active centres in fashion and textiles are Germany (55% of the total centres mapped in the country), Italy (nearly 30% of the total centres mapped in the country), France (11%), and the UK (26% of the centres mapped in the country). Romania (75%), Poland (67%), Germany (55%), Switzerland (45%) and Portugal (40%) are the countries with the highest concentration of total centres active in fashion.

Two geographies therefore emerge. On the one hand we can see that the most important producer countries in the sector show higher absolute numbers of independent centres with a specific interest in the fashion and textile sector (and located in most cases in territories historically associated with this kind of production). On the other hand, we see new emerging countries driven by those to which production has been delocalised (Romania and Portugal) and some countries that have no tradition/ weight in terms of production, but which clearly support innovation in a transversal manner (Poland 67%, Switzerland 44%, Belgium 35%, and Austria and Ireland both 33%).

Tab. 2: Active centres in fashion and textiles: distribution of mapped centres in relation to city dimension; percentage of centres active in fashion out of total fashion centres per country; percentage of fashion and textile centres out of total centres

Country	Capital	Large	Medium	Small	Village	Total Centres per Country	% Over total
Austria	3	2	0	0	2	7	33
Belgium	4	3	2	0	0	9	35
France	3	7	1	1	2	14	38
Germany	6	20	3	3	1	33	55
Ireland	0	0	1	0	1	2	33
Italy	1	10	2	4	2	19	30
Netherlands	2	2	1	0	1	6	25
Poland	3	3	0	0	0	6	67
Portugal	1	2	1	1	1	6	40
Romania	0	3	0	0	0	3	75
Spain	2	6	0	0	0	8	27
Switzerland	1	2	1	4	0	8	44
United Kingdom	2	9	0	0	0	11	26
TOTAL	28	69	12	13	10	132	
%TOTAL	21%	52%	9%	10%	8%	100%	

Source: our elaboration

Regarding the location of innovation centres dealing with fashion and textiles, most of centres are in large cities (52%) or capital cities (21%), and almost a third of the centres are located in small or medium-sized towns or villages.

Design (69%) and crafts (64%) are the most frequent sectors of activity of the centre that host fashion and textile facilities, as well as software (64%). This is a good indicator of the level of use of digital tools in

makerspaces and fablabs that are active in fashion and textiles and pursue innovation in this field. Other relevant sectors of activity related to fashion and textiles are contemporary art (25%), and related sectors (architecture and performing arts, both around 13%).

Almost one third of the centres active in fashion and textiles are totally independent, while a strong concentration of hubs belonging to the Fab Lab network emerges (41%, including local Fab Lab networks, such as Fab Lab Lazio in Italy, Swiss Fab Labs, etc.), as well as part of a university department devoted, for example, to design, fashion, or architecture.

With regard to activities offered by these centres, around 82% of those active in fashion and textiles offer training, courses, and workshops in the fashion and textile field (Table 3).

Tab. 3: Counted trainings in fashion and textile per country

Country	Total Counted Trainings in 2019	Ratio Trainings active in fashion/Centres active in fashion	Centres offering Training	% Fashion centres offering trainings
Austria	33	4.7	5	71
Belgium	35	3.9	6	67
France	25	1.8	12	86
Germany	239	7.2	27	82
Ireland	10	5.0	2	100
Italy	60	3.2	16	84
Netherlands	13	2.2	6	100
Poland	23	3.8	6	100
Portugal	5	0.8	5	83
Romania	0	0.0	1	33
Spain	20	2.5	7	88
Switzerland	8	1.0	8	100
United Kingdom	26	2.4	7	64
TOTAL	497		108	82

Source: our elaboration

The mapped makerspaces and fablabs active in the fashion and textile field offer support for business development, especially for mentoring (70%), contacts with potential clients (31.35), and seed funds (9%).

Unlike the case with training activities, the data on business development support show wide differences between countries. Independent innovation centres in Belgium, France, Ireland, the Netherlands and Spain provide it in almost all cases. In other countries, such as Germany and Italy, business support initiatives are present in 27% and 38% of cases respectively, despite having potentially a very developed B2B market in the country that is capable of absorbing the innovations produced (Tab. 4).

Tab. 4: Support for business development per country

Country	No	Yes	Total	% No	% Yes
Austria	10	11	21	48	52
Belgium	1	25	26	4	96
France	3	34	37	8	92
Germany	44	16	60	73	27
Ireland	1	5	6	17	83
Italy	40	24	64	63	37
Netherlands	4	20	24	17	83
Poland	8	1	9	89	11
Portugal	11	4	15	73	27
Romania	2	2	4	50	50
Spain	5	25	30	17	83
Switzerland	12	6	18	67	33
United Kingdom	27	16	43	63	37
TOTAL	168	189	357	47	53

Source: our elaboration

4.2 Innovation practices in European independent centres for supporting active ageing and silver fashion

Coming to the propensity for independent innovation centres to consider the population over 65 as one of the target markets of their innovation processes, this was assessed both on the basis of the habit for co-creation - one of the ways in which design is used to define needs, and the expectations of specific targets - and, more directly, by identifying if and how the centres promote initiatives for the design and production of products for the elderly.

The centres active in the fashion and textile fields are usually involved in multiple parallel and complementary activities aimed at social inclusion, linking design with social impact. The hosted activities are in the fields of healthcare and disabilities (37%), the environment, sustainable and eco production (34%), community and social resilience (22%), and young communities and children.

As shown in Table 5, there is a relatively low involvement (6%) in active ageing and in considering the over-65 population as a target.

In the whole database, only 12 activities have been detected aimed at seniors, 4 of them in the centres active in fashion and textiles; while 8 centres develop products for elderlies, and only 2 of them include textiles and fashion products.

Tab. 5: Active ageing and over-65 population as a target, activities offered

Focus Elderlies	Activities	Products	Including textile products
All Centres	12	8	2
Centres active in fashion and textile	4	6	2

Source: our elaboration

Among the most significant experiences - also because of the co-creation process implemented - is the one developed in Slovenia by RogLab, a production space focused on the creative use of 3D technologies.

In 2019, RogLab decided to launch a survey among the elderly of the city of Ljubljana to assess their interests and needs for the development of innovative solutions for active ageing.

The positive feedback collected led the makerspace to launch an international call for designers - "RogLab Open: Active Aging" - with the aim of developing socially conscious solutions to enable over-70s to lead active and independent lives in their homes or in public spaces, be they indoors or outdoors.

The call was promoted with the support of 35 FabLabs and workshops from 27 countries. Out of the thirty project ideas developed by the selected designers, four were selected for prototyping, one of which applies technical innovations for fashion and clothing for active ageing.

The garments designed - for men and women - were classically tailored clothes with adaptations for non-standardised body shapes and for easier use by the elderly thanks to the application of magnetic zippers and buttons.

The elderly participants in "RogLab Open: Active Aging" commented that the most satisfactory factor was feeling dignified in their clothes, without having to choose comfort over beauty.

All the creations prototyped within the project were exhibited at the MAO Museum of Architecture and Design in Ljubljana and made available by the designers with a Creative Commons 4.0 license for digital fabrication.

5. Discussion and conclusions

The evidence that emerges from the analysis relates both to the role that independent centres in Europe play today in the innovation of the cultural and creative sectors - and of fashion in particular - and to their potential for effecting a change of perspective towards an overlooked market: the over-65s. In general, one first element that emerges concerns the geographical distribution of the centres and their activities: the countries that stand out for their ability to promote independent innovation are not always the leading countries in the production of fashion and textile products. The countries with the highest absolute number of centres that are active in fashion and textiles are in fact Germany (55% of the total centres mapped in the country), Italy (nearly 30% of the total centres mapped in the country), France (11%), and the UK (26% of the centres mapped in the country); while Romania (75%), Poland (67%), Germany (55%), Switzerland (45%) and Portugal (40%) are the countries with the highest concentration of centres that are active in fashion compared with the total number of centres.

Two geographical pictures therefore appear: that of the most important fashion producer countries - such as Italy or France - that reveal higher absolute numbers of independent centres with a specific interest in the fashion and textile sector; and that of countries that do not have a specific tradition in the fashion industry but which clearly support innovation with respect to all the creative production sectors in a transversal manner.

A second element shows that while the number and variety of the projects in European independent innovation centres proves to be significant for innovation in the fashion industry, the over-65 target is rarely identified as one of specific interest despite the large proportion of the European population in this age group and its significant purchasing power.

Considering that the European population is ageing in ways that increasingly allow people to extend their healthy, youthful lifestyles for much longer, and that many of the "new" elderlies or "perennials" want to stay active, are aware of what is happening in the world, and desire to keep abreast with technology, this target should not be overlooked.

As discussed in the previous sections of this paper, the development of assistive technologies for self-care and self-healthcare and the adoption of garments and accessories that allow active security functions such as monitoring vital signs or physical activities will be progressively more strategic for the growth of the fashion industry, as also confirmed also by the experts interviewed. Ergonomic textiles, materials with drug-releasing properties or ones that are able to mitigate the effects of a fall, and antibacterial or antimicrobial textiles were cited by experts as promising fields for research and product development. Moreover, while responding to health and wellbeing needs, the fashion industry also needs to ensure that its products continue to be aesthetically attractive in order to gain relevance. Nonetheless, very few independent centres organise activities specifically targeting the application and experimentation of technological innovation for the benefit of the elderly and for active ageing, and older people have hardly been identified by our research among the users or guests of fablabs or digital fabrication spaces.

This seems to be connected in particular to the location of these spaces and to the approach they adopt. As regards the former, the figures reveal that a considerable number of maker spaces and fablabs are in post-industrial areas of cities, while their establishment has often been associated with major urban regeneration programmes. Such areas are frequently non-residential and therefore less attractive to older people and harder for them to reach. Greater involvement of the elderly could therefore be achieved through a greater presence of independent centres in residential districts or through offsite activities in collaboration with commercial and cultural spaces visited by over 65s.

Moreover, according to the experts interviewed, another reason why the role of the elderly often remains marginal to co-designing innovation processes is also because of a diffuse absence of a common language and understanding when it comes to the nature and potential application of technologies. As regards the latter, the issues of the digital literacy of older people and of technological and scientific dissemination (Francis *et al.*, 2019) are fundamental. From this perspective, if we want to include seniors in participatory innovation processes, it is also essential for independent innovation centres in fashion to be able to support digital literacy activities and develop targeted communication strategies towards this audience in order to promote a better knowledge of technological innovation in the fashion industry.

In other words, in order to bring about innovation, designers and makers need to find the way to actively involve ageing people in the design processes, with the development of suitable, ad hoc participative methodologies for the conception, prototyping and trial of products (Schmidt-Ruhland and Knigge, 2008).

Finally, an interesting idea that emerges from the analysis - also confirmed by the panel of experts interviewed - regards the opportunities for innovation centres to effect the transfer to the niche silver market of relevant innovations (e.g. new materials, ergonomic models, etc) that have been developed both in segments of the fashion industry where more investments are currently made - the sportswear sector for instance (Piccinini *et al.,* 2020)- and by lead users of other target markets (Helminen, 2008); this requires the implementation of new business support activities for fashion companies and fashion designers.

If these results therefore provide some interesting strategic indications, a number of aspects should be detailed for a better understanding of how to incentivize knowledge and technological transfer both between sectors and between actors operating in the same sector.

This first explorative study has two main limitations. On the one hand it only investigates independent innovation centres. Future research developments could usefully examine and integrate the perspective of large companies to understand if and how they are responding to the growing demand for fashion from the elderly. Such an investigation should be carried out not only for textile and fashion manufacturers, but also for companies that operate in market segments whose products have technical features that could be transferred more easily to a market segment that demands products that could meet health needs and not just aesthetic ones.

The research should also be enriched by exploring the policies in favour of the fashion industry that could incentivize research and development targeted at finding new solutions for the over-65 market. There are specific policies both at the European and at the national level in other sectors, such as health, housing and transport (European Commission 2015), that have established the appropriate framework and incentives for responding to this demand.

Active and healthy aging is in fact a challenge that is shared by all European countries and provides a huge opportunity for Europe to establish itself as a global leader, one that is also able to provide innovative solutions by redefining the potential role of those industries, such as fashion, that might seem irrelevant with regard to the question. It can also act as an aggregator by bringing together all the innovative actors who are already committed to similar challenges in sectors other than fashion.

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