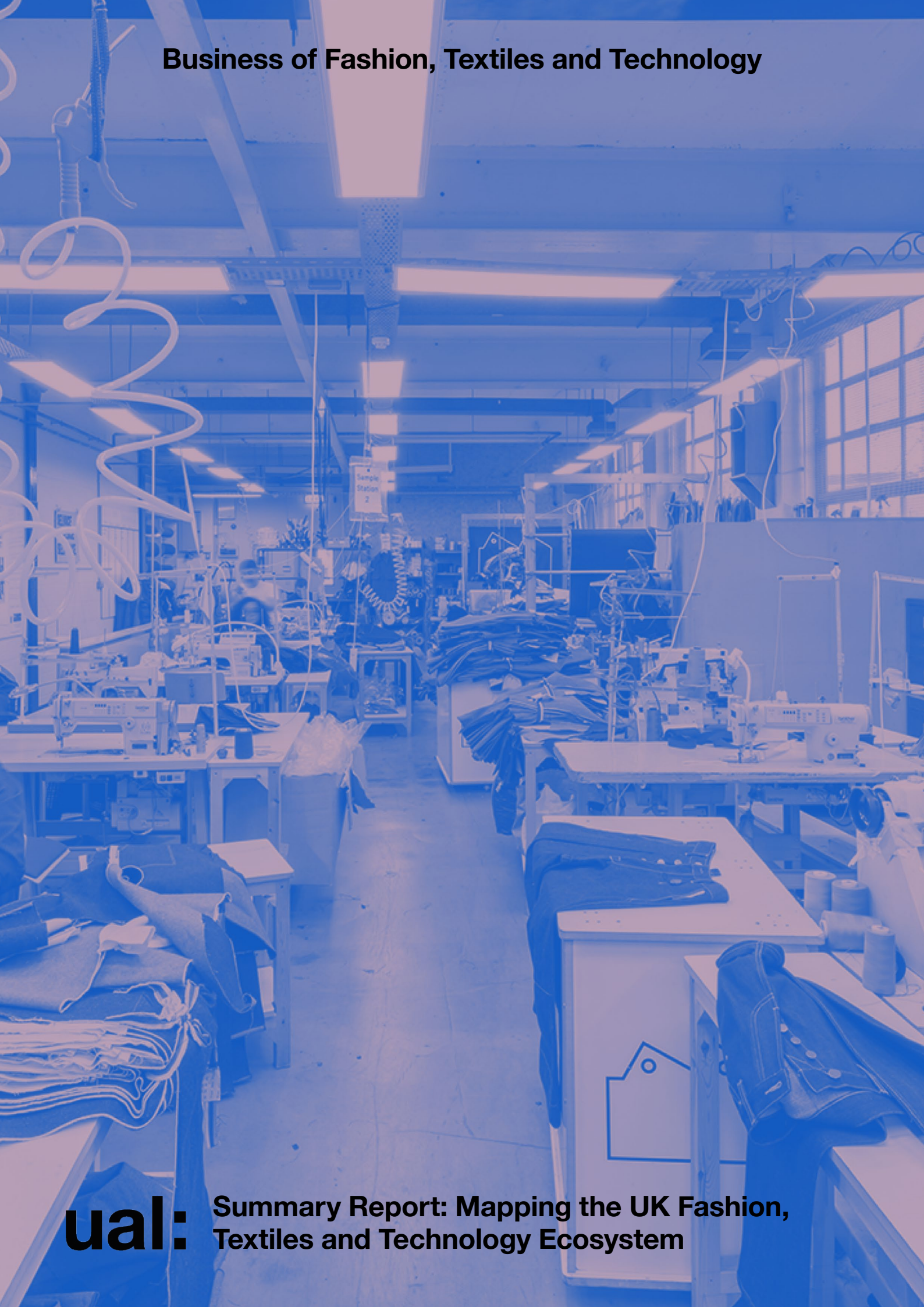
Business of Fashion, Textiles and Technology



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Summary Report: Mapping the UK Fashion, Textiles and Technology Ecosystem

Identifying opportunities for investment, research and development, business growth, job creation and tackling skills gaps

By Professor Jane Harris, Dr Lipi Begum and Dr Alessandra Vecchi

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The BFTT Partnership

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- UK Fashion & Textile Association (UKFT): ukft.org
- British Fashion Council (BFC): britishfashioncouncil.co.uk
- Future Fashion Factory Creative R&D Partnership (FFF CRDP – £5.4m), led by the University of Leeds: futurefashionfactory.org

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Forewords




Christopher Smith, Executive Chair, Arts and Humanities Research Council
Andrew Chitty, Challenge Director, Creative Industries, UK Research and Innovation

How we dress is a matter of intense interest to ourselves and to others. Costume, clothing and textiles are more than practical defences against the weather (though they can also be that); they have been associated from the earliest times with adornment and self-fashioning. How we look is part of who we are. In some times and places, this has been and still is rigorously policed and controlled. But for many in the contemporary western world, the way we dress, and interface the world, is a mark of our choices over identity and individuality.

This makes fashion, and its many adjacent fields, a fascinating business — in all senses. This includes the degree to which fashion has become such a defining element of modern culture; it is after all one of the most visible ways in which we reveal our consumer choices. And the way we consume — the extent to which that consumption is ethically driven, and expresses cultural and political choices around sustainability, or the avoidance of forced labour, or choices of local production over mass produced international products, is all part of the story.

But despite this centrality to modern culture and to our economy, the dynamics, creative geography organisational structure and creative

evolution of the fashion, textiles and wider apparel industry are less well understood than for other creative sectors. That's what makes this report such a significant milestone and for industry, researchers and policymakers such essential reading. It challenges us to see beyond conventional views of the fashion sector to an emerging, agile and dynamic ecosystem of Fashion, Textiles and Technology businesses that span the UK from Cornwall to Na h-Eileanan Siar, from Derry/Londonderry to Lowestoft with East London, the world's number 1 ranked fashion district (and home to the BFTT partnership) at its heart.

The Creative Industries Clusters Programme was established as an experiment in scaling up creative R&D funding through partnerships where researchers and businesses could work together to deliver innovation, growth and employment in a given geography. The depth of analysis in this report, the insights into how young companies tick and the clear identification of opportunities for innovation in technology, materials, manufacturing and supply chains, with circularity and sustainability at the core, demonstrates the value of the approach. The identification of opportunities for R&D programmes to support fashion's transition to a more sustainable future provides both leadership for the sector and inspiration to others seeking a route to a more circular economy.

As we build the case for a long-term support for research and innovation in the Creative Industries this report shows very clearly why Fashion, Textiles and Technology must be at the heart of that mission.

Adam Mansell, CEO, UK Fashion & Textile Association (UKFT)

The UK fashion and textiles sector has changed significantly in the past 20 years. It is no longer defined by traditional designer fashion. Today, the UK's fashion, wider apparel and textiles manufacturing sector produces over £9 billion of product for export, ranging from designer creations seen on the top catwalks to growing specialist markets in sportswear products to fabrics used in medical, defence and transport industries. Yet the sector receives limited research and development (R&D) funding.

Now more than ever, we must continue to address the shortage of skills and training in the sector and in UK-based advanced manufacturing. The UKFT is the government-appointed sector skills body for the industry. We recognise a pressing need to understand the sector's breadth and geographic spread, the position of trade bodies and intermediaries such as UKFT, and the challenges and opportunities for growth and research and development investment as the UK enters the next 20 years of fashion, textiles and technology.

This timely report shares the UKFT's belief that, with sufficient R&D funding, academic and cross-sectoral business support, the creative industries, a skilled workforce and small business growth will be essential drivers of the UK's economic recovery and growth. This report is an essential read that forms the baseline for further study, and investment into the sector.

Professor Jane Harris, Director, Business of Fashion, Textiles and Technology (BFTT), report co-author

This report is the first to position textiles and apparel squarely as part of a much wider network or ecosystem that encompasses an enormous variety of significant and highly investable 21st-century sectors, from materials design and engineering to software imaging and gaming to smart and biotechnology, as well as more integral industries, ranging from agriculture to advertising — some of which are not perceived as obvious partners.

There are entirely new opportunities for research and development (R&D) funding to support the established industry, in addition to an emergent, technology-savvy, environmentally engaged and agile fashion, textiles and technology (FTT) culture based around small, medium and micro enterprises. This makes it critical at this point to establish a fuller understanding of the UK FTT ecosystem.

While this report identifies many challenges, it also identifies significant levels of opportunity. Despite the current global challenges, there is tremendous potential for the future of the UK FTT industry. Over time, affiliated industry organisations such as the UK Fashion & Textile Association and the British Fashion Council, working with university-led clusters such as the Business of Fashion, Textiles and Technology, and Future Fashion Factory Creative Research & Development Partnerships, have identified strong existing networks across the textiles and apparel sector, and a range of other industries. Our understanding of the extent of these networks has been further enhanced by our work on this report. This can only help make the FTT industry more visible to other relevant potential partners and attract vital technical stakeholders — as long as we draw effectively on this significant and highly valuable repository of knowledge, and deliberately support our FTT industry technologically, financially and with improved access to the expertise it needs.

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1.0 Executive Summary

Making for Change Training Programme at Poplar Works, run by London College of Fashion, UAL and Newham College. Photo by Rehan Jamil

The UK fashion industry lacks robust data and compelling evidence compared to other creative industries regarding research and development (R&D) opportunities, business growth options, job creation and investment. Official data sources on the fashion industry are limited to 'designer fashion', which is conflated with 'other design' activity, and focuses on established brands and large retailers, and unrelated textiles manufacturers. **In response to this deficit and to concerns around R&D, identified through the development of the Business of Fashion, Textiles and Technology (BFTT) creative R&D partnership proposal (2017), the BFTT launched a UK-wide survey of the fashion, textiles and technology (FTT) ecosystem.**

The survey consultation (the launch of which preceded Covid-19 and Britain's exit from the EU) engaged over 2,400 small, medium and micro businesses (SMEs) and over 100 stakeholders and intermediaries, including industry specialists, trade bodies and workspace providers. **The consultation received 814 survey responses and led to 65 stakeholder interviews, making it one of the most extensive baseline studies to date on FTT SMEs in the sector.**

This report for the first time positions the UK sector as not weighted toward fashion only. It illustrates the textile, materials and technology elements as key parts of this ecosystem and shows the industry is highly heterogeneous, made up of intersecting textiles and technology companies that inform an array of multiple sectors.

This report is the first comprehensive insight into the UK FTT ecosystem leading up to March 2020 — pre-Covid-19. The wide-ranging survey it is based on has been instrumental in gaining an in-depth understanding of the polycentric nature of the sector and its geographical spread. These factors should strongly influence both how the sector is viewed as an economic resource of national importance and the future allocation of the R&D it needs to access in order to thrive — and our research also provides initial insights for progress post-Covid.

UK Sector Overview in Brief

£9 billion — amount of product for export produced by the UK's fashion, wider apparel and textiles manufacturing sector. Source: UK Fashion & Textile Association (UKFT), 2020, Fashion & Textiles post Brexit

£74 billion+ — amount spent by UK consumers on clothing, clothing accessories, household textiles and carpets. Source: UK Fashion & Textile Association Industry Overview, 2018, accessed February 2021

£35 billion — amount contributed by the fashion industry to the British economy. Source: British Fashion Council (BFC), 2020, Annual Report & Accounts FY 2019/20

890,000 — people employed by the British fashion industry. Source: British Fashion Council, 2020, Annual Report & Accounts FY 2019/20

Geo-tagged respondents FTT Ecosystem Survey, 2020.
Geodata Source: BFTT FTT Ecosystem Survey, 2020.
Map Source: Ordnance Survey, OpenData, Boundary-Line™ 2020

82% of companies employ fewer than 10 people. Source: Business of Fashion, Textiles and Technology (BFTT) Mapping the UK Fashion, Textiles and Technology Ecosystem report, 2021

Fashion, Textiles & Technology Skills Shortfall

Business development skills 4.2
Team/collaborative working 4.1
Leadership skills 4.0
Customer service skills 4.0
Crafts/technical skills 3.8

[Scores: 1.0 = not at all important; 1.1 to 2.0 = low importance; 2.1 to 3.0 = neutral; 3.1 to 4.0 = important; 4.1 to 5.0 = very important]

Research & Development Needs

Increasing sustainability-led activities 4.4
Increasing volume/scale/markets 4.2
Improving manufacturing quality 4.0
Investing in marketing 4.0

[Scores: 1.0 = not at all important; 1.1 to 2.0 = low importance; 2.1 to 3.0 = neutral; 3.1 to 4.0 = important; 4.1 to 5.0 = very important]

'*We have to do lots of research to make sure that our sustainability claims are genuine and that we can stand behind them*' — Rob Webbon, CEO and founder, Presca Teamwear

Location, Location, Location — National Hubs Are Key

60% of FTT SMEs say location is of high importance to their business.

'*Finding affordable space is a challenge for most creatives*' — Bud Moore, consultant to Open Cell affordable studios, London

Quality of life is rated as the most important location-related factor, followed by quality of infrastructure and access to affordable workspace.

Emergent Fashion, Textiles and Technology micro clusters of activity were identified by BFTT in and around Bath, Belfast, Bolton, Birmingham, Bristol, Cambridge, Cardiff, Dundee, Edinburgh, Falmouth, Huddersfield, Leeds, Leicester, Loughborough, Manchester, Nottingham, Preston, Newcastle, Rochdale, Southampton and Swansea.

Key Findings and Recommendations

With sustainability and technological advances at its core, this report provides an in-depth discussion of the findings of the Business of Fashion, Textiles and Technology (BFTT) survey and recommendations for the growth of the UK fashion, textiles and technology (FTT) related economy.

- The UK should capitalise on its rich heritage of both quality and luxury textiles, and of manufacturing networks supporting regional growth — and should strengthen expertise across the UK to attract inward investment and exporting opportunities post-Brexit. BFTT recommends **an increase in culture-based R&D grants, with cultural institutions to support FTT-focused regional storytelling and placemaking.**

- Increase longer-term and consistent funding support for **Local Enterprise Partnerships and business growth hubs** to strengthen regional growth and cross-regional networks.

- There is a need to see the bigger picture around the fashion,textiles and technology (FTT) industry and its impact on the climate. **Larger-scale R&D investment into circular and sustainable business models, recycling systems and legislation** are required to help FTT SMEs contribute toward driving UK 2030 Sustainable Development Goals (SDGs).

- **Increase SME R&D and materials innovation funding schemes** for the development of small-scale and local manufacturing of luxury, smart and advanced technical textiles, such as biomaterials, automotive and medical textiles.

- **Increase skills development funding** to sustain the UK's reputation for fashion and innovation: to include investment into inclusive digital, technical and craft, and careers skills programmes, executed through UK-wide multidisciplinary university and institute partnerships with primary, secondary, post-18 apprenticeship and industry leadership training programmes.

- **Introduce R&D-specific funding streams for Local Enterprise Partnerships** to better support regional FTT SMEs with understanding technical and scientific criteria for R&D, and applying for R&D grants and tax relief.

- **Tax and business rates reform consultation** is required for SMEs to better align with an increasingly digital marketplace and to offset the rising costs of physical commercial space.

- Increase the number of research and development (R&D) investment schemes to **support SME retailers with transitioning to online and mixed/physical business models.**

- A **review of Standard Industrial Classifications (SICs) for the FTT sector** may help to improve capture of emergent business models and facilitate the breaking of silos across the creative sectors.

- Increase government funding support for **resilience planning and importing/exporting guidance** for small, medium and micro enterprises (SMEs), to help recovery and growth post-Brexit and post-Covid-19.

Methodology

Phase 1 | UK Business of Fashion, Textiles and Technology Survey

814 responses[1] were received. Of these, 157 were partial and deemed unusable and 36 were from outside the UK, leaving 621 UK small, medium and micro enterprise (SME) responses usable for analysis. Estimated survey engagement and awareness included over 2,400 fashion, textiles and technology (FTT) SMEs nationwide.

Phase 2 | 65 interviews with FTT Intermediaries[2] and SMEs

Phase 3 | Geospatial data analysis and cluster mapping using geographic location and 648 SIC[3] codes of SMEs that responded to the survey[4]

Survey Aims

- To map the UK FTT ecosystem by sub-sector and identify intervention points as evidence for future R&D investment and economic development.
- To investigate barriers to sustainable growth and latent R&D opportunities for SME FTT businesses.
- To assess FTT industry R&D, skills and training needs.
- To analyse the provision and scope of specialist FTT intermediary support, including business incubation and enterprise support, and support from universities and workspace providers.

[1] From a total population size of 59,205 UK fashion industry small, medium and micro-sized enterprises (Office for National Statistics, 2018), BFTT obtained a representative sample of 814 survey responses.
[2] The BFTT survey and consultation determined that three types of intermediation were required to drive a sustainable fashion economy. Based on the three modalities, BFTT grouped intermediaries into three broad FTT categories: physical support — e.g. workspace providers, co-working spaces, housing associations; business support — e.g. accelerators, incubators, Local Enterprise Partnerships; and policy support — e.g. think tanks, trade and regulatory bodies.
[3] SIC codes and sub-sectors were identified through the Companies House register for SMEs that responded to the survey, except for those SMEs that could not be identified under a trading name. The UK Standard Industry Classification (SIC) is a five-digit code that groups companies by business activities. When incorporating a company, businesses can select up to four SIC codes to provide Companies House and banks with an understanding of what the company does: https://www.ons.gov.uk/methodology/classificationsandstandards/ukstandardindustrialclassificationofeconomicactivities, accessed February 2021
[4] This methodology was used to better understand the breadth of the sector across a comprehensive range of sub-sectors, including technology industries not captured in previous studies. The geo-mapping was used to identify emergent regional clusters and key industry correlations and spread of the sector across the UK.

2.0 The R&D Challenge

Producer of Made to Measure denim, Photo by Carmel King © Blackhorse Lane Ateliers

In 2017, the UK government launched its Industrial Strategy Sector Deals — partnerships between government and industry that aim to increase sector productivity. The Creative Industries Sector Deal included funding of £80 million for the Creative Industries Cluster Programme (CICP), of which the Business of Fashion, Textiles and Technology (BFTT) Creative R&D Partnership (CRDP) is part.

While the deal has begun to shape the future of the sector, the UK is experiencing the lowest productivity growth for the past 250 years. The widely debated 'productivity puzzle' was attributed to a combination of three 'adverse circumstances, namely, a financial crisis, a weakening impact of information and communications technology, and impending Brexit,' in a 2019 report by the University of Warwick. This has impacted the Fashion, Textiles and Technology (FTT) sector in terms of low growth within the UK retail industry.

Another reason for this low growth is that the FTT industry, alongside other creative industries within the Sector Deals, has historically been less successful in achieving research and development (R&D) funding. It is thus essential to understand the current barriers to R&D investment.

There is a limited understanding among FTT SMEs of how R&D is classified. The lines are blurred between what constitutes business development and business innovation, versus R&D — making it difficult for SMEs to apply for R&D funding successfully and operationalise new product and business innovations. This is amplified by the fact that over 96% of UK SMEs are early-stage micro enterprises[5], according to 2020 figures from the ONS[6], with limited capacity for meeting the scientific or technical delivery criteria set out by the HM Revenue & Customs (HMRC) definition of R&D for tax relief and subsidies.

'*Business rates and tax relief, including R&D tax credits, are not understood by most small businesses. This can make a significant difference to their finances*' — Sue Tilley, economic strategy manager, Leicester and Leicestershire Enterprise Partnership

The BFTT survey and consultation were designed against the backdrop of these challenges, and the results are positioned within the UK FTT R&D landscape discussed above.

The survey was divided into three sections:

- **Business Models and Locations**
- **R&D and Innovation Needs**
- **Barriers to and Opportunities for R&D and Growth**

[5] BFTT uses the acronym SME to refer to small, medium and micro-sized enterprises. BFTT incorporates micro enterprises into the acronym to illustrate an accurate picture of the UK FTT ecosystem. SMEs and micro businesses dominate the industry, with 82% of companies employing fewer than 10 people, according to the BFTT survey. Business size definitions are taken from the widely used current description provided by the European Commission (Recommendation 2003/361/EC), which defines SMEs based on their headcount and turnover as follows: micro business: fewer than 10 employees, turnover under €2 million; small business: fewer than 50 employees, turnover under €10 million; medium business: fewer than 250 employees, turnover under €50 million.
[6] Office for National Statistics, 2020, https://researchbriefings.files.parliament.uk/documents/SN06152/SN06152.pdf

3.0 The UK FTT Ecosystem

Manufacturers of non-woven 'Cloudwool', suit by Eliza Colin © Doppelhaus

The Business of Fashion, Textiles and Technology (BFTT) survey results illustrate the polycentric nature of the UK Fashion, Textiles and Technology (FTT) ecosystem today and a wider geographic spread not captured in previous datasets and studies on the sector.

Table of descriptive data on the geographical spread of the UK FTT industry to date

	Scotland	Northern Ireland	Wales	North East	Yorkshire and Humber	North West	East Midlands	West Midlands	East of England	London	South East	South West
Geographical spread based on the Office for National Statistics (ONS) data of the UK Fashion and Textile Industry, 2020*	5%	2%	3%	2%	7%	10%	7%	7%	8%	28%	14%	7%
Geographical spread based on the BFTT UK Fashion, Textiles and Technology (FTT) Ecosystem Survey Responses, 2020	4%	4%	4%	2%	6%	11%	6%	2%	3%	44%	8%	6%

**Source: Office for National Statistics, 2020, Analysis showing the count, employment, employees and turnover of VAT and/or PAYE based enterprises in Regions of the United Kingdom for the Fashion and Textile Industry, Snapshot of the Inter-Departmental Business Register taken on 13 March 2020*

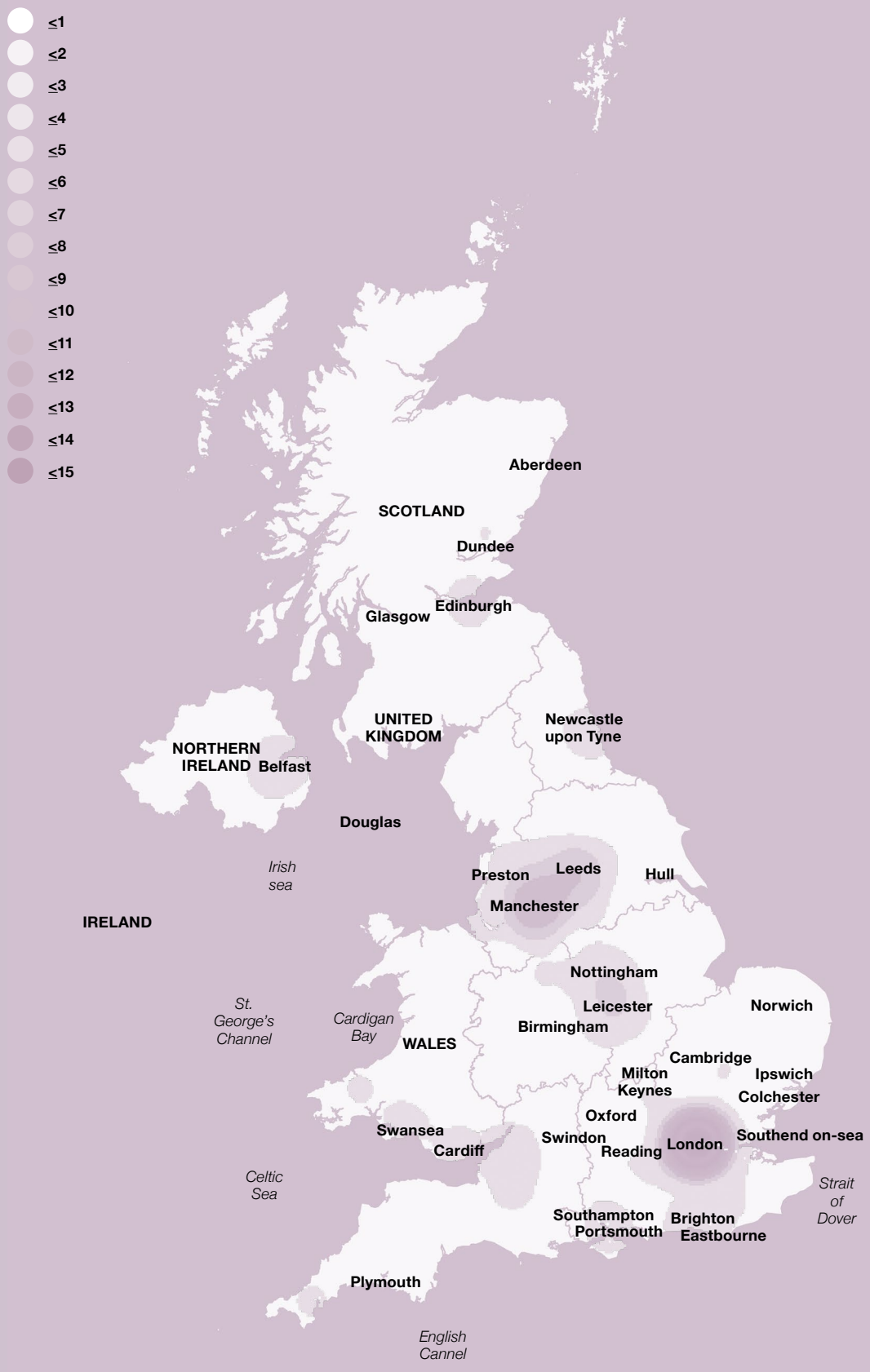
Office for National Statistics (ONS) 2020 fashion and textile industry data[7] shows that fashion clusters are spread across 12 UK regions. The BFTT survey (2020) indicates a similar spread across 12 UK regions **(see regional spread table above)**.

The regional spread of the BFTT survey responses broadly supports other creative industries data[8] and shows that creative industries tend to be relatively larger in London's economy and in the South East, with lower median creative industry shares in regions such as Northern Ireland.

Outside Greater London and the South East, the BFTT survey identifies emergent FTT micro clusters of activity in and around

[7] Office for National Statistics, 2020, Analysis showing the count, employment, employees and turnover of VAT and/or PAYE based enterprises in Regions of the United Kingdom for the Fashion and Textile Industry, Snapshot of the Inter-Departmental Business Register taken on 13 March 2020
[8] Mateos-Garcia, J., Klinger, J., & Stathoulopoulous, K., 2018, NESTA, Creative Nation: How the creative industries are powering the UK's nations and regions, https://media.nesta.org.uk/documents/creative_nation-2018.pdf

Kernel Density Map of UK Fashion, Textile and Technology (FTT) Clusters.
Geodata Source: BFTT FTT Ecosystem Survey Reponses, 2020
Map Source: Ordnance Survey, OpenData, Boundary-Line™, 2020



Bath, Belfast, Bolton, Birmingham, Bristol, Cambridge, Cardiff, Dundee, Edinburgh, Falmouth, Huddersfield, Leeds, Leicester, Loughborough, Manchester, Nottingham, Preston, Newcastle, Rochdale, Southampton and Swansea (see Kernel[9] Density Map).

Outside Greater London and the South East, the BFTT survey identifies emergent FTT micro clusters of activity in and around Bath, Belfast, Bolton, Birmingham, Bristol, Cambridge, Cardiff, Dundee, Edinburgh, Falmouth, Huddersfield, Leeds, Leicester, Loughborough, Manchester, Nottingham, Preston, Newcastle, Rochdale, Southampton and Swansea.

In previous economic and employment studies[10] [11] fashion activity was perceived as being restricted to a very narrow band of SIC categories — just three or four, including C: Manufacturing; G: Wholesale and Retail Trade; and R: Arts, Entertainment and Recreation. In contrast, the BFTT survey responses, while they still skew towards categories C and G, capture small, medium and micro enterprises (SMEs) classified across a broader range of categories, as responses were encouraged from a wider range of businesses linked to the FTT cluster, as outlined in the methodology section. These include M: Professional, Scientific and Technical Activities, and P: Education. Within the SIC categories identified, the BFTT survey also captures further sub-classes.

The self-classification of a broader nature of business classifications by FTT SMEs demonstrates adjacent industries developing links to other sectors, and, notably, the dilution of traditional fashion silos and emergent breadth of the UK fashion sector.

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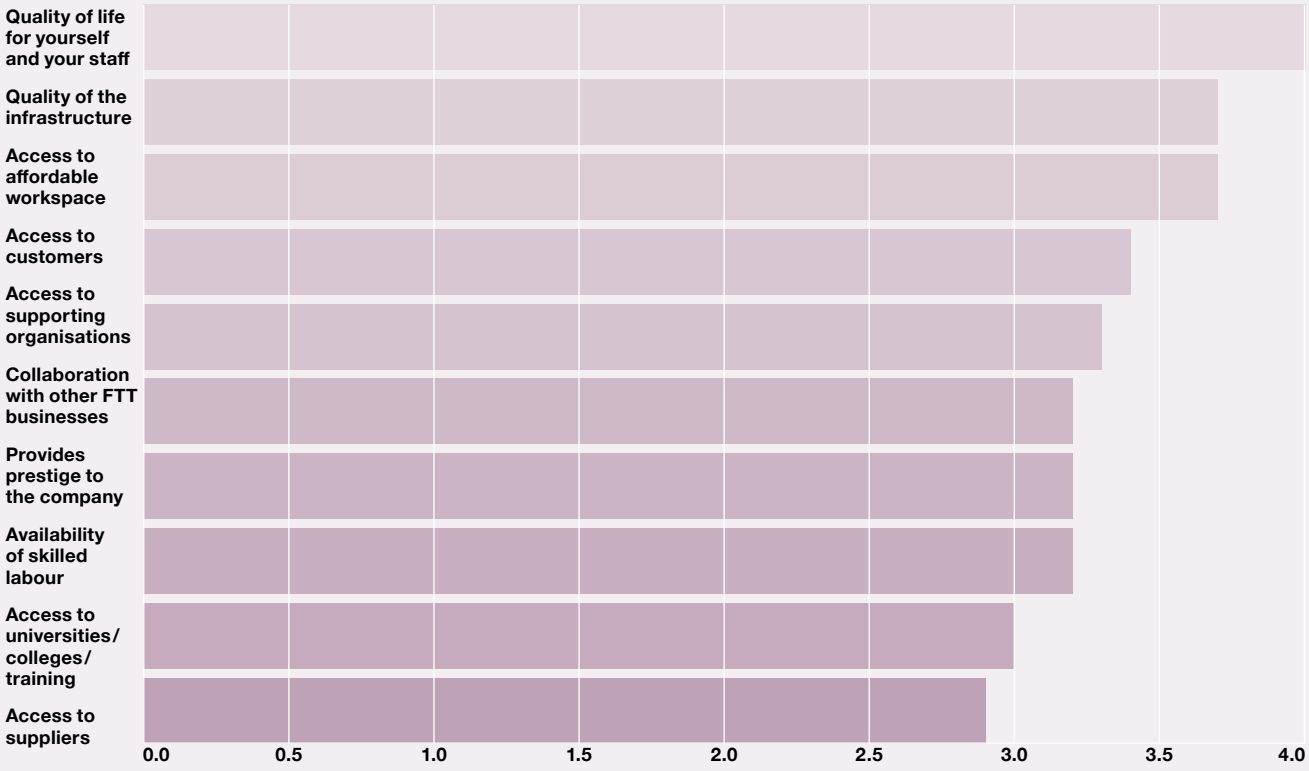
Importance of Intermediaries and Location for UK FTT Clusters

The importance of location and the extent to which opportunities are linked to a specific place influences the forming of clusters, specialised intermediaries and access to resources **(see Figure 1, page 20)**.

From the FTT survey responses, the BFTT found that collaboration and access to universities, colleges and training were of high importance for

[9] Kernel density analysis is a statistical analysis that calculates a magnitude-per-unit area from point or polyline features using a kernel function to fit a smoothly tapered surface to each point or polyline, and is useful for fine-grained analysis of regions with densely populated SMEs
[10] Bakhshi, H., & Mateos-Garcia, J., 2016, NESTA, The Geography of Creativity in the UK, https://www.nesta.org.uk/report/the-geography-of-creativity-in-the-uk/
[11] Office for National Statistics, 2020, Fashion Industry by Constituency https://www.ons.gov.uk/businessindustryandtrade/business/activitysizeandlocation/adhocs/11807fashionindustrybyconstituency

Figure 1: How Important is the location of your business based on the following factors?



Average Mean Score
0–0.9 = not important, 1–1.9 = low importance, 2–2.9 = neutral, 3–3.9 = important, 45 = very important

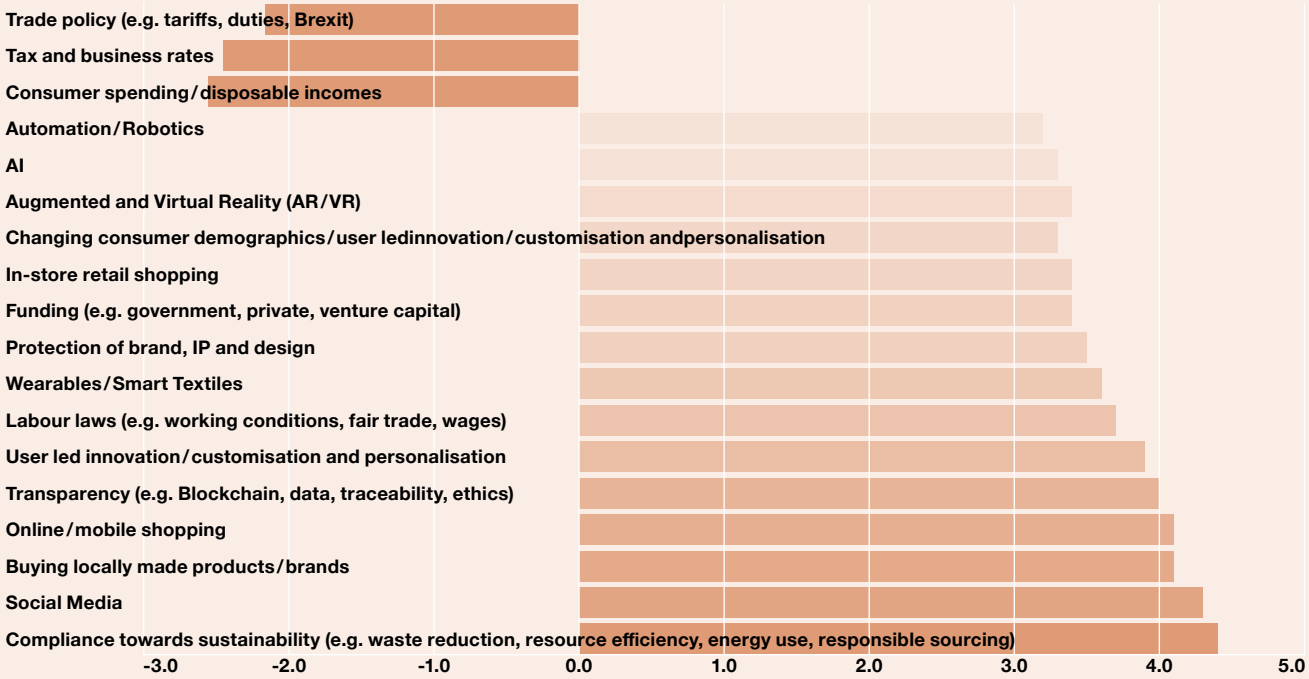
the future of the sector. SMEs in the early stages of business that had been trading for less than one year placed greater importance on accessing supporting organisations and partnership opportunities within the UK. For early-stage SMEs, intermediaries play a crucial role in providing access to new networks and commercial opportunities. Overall, the importance of collaboration with the FTT sectors for business growth and profits was of high importance to SMEs across all UK regions. Cooperation with the FTT sector is linked to access to supporting infrastructure and the importance of access to suppliers, which was critical across all UK regions.

'*Our biggest barrier in Lancashire and Blackburn is that we have a strong historical and industrial heritage linked to the textile industry, but few consider north west England beyond Manchester, and Lancashire for its innovation and automated high-tech facilities used in the Airbus, for example. The future vision of regions outside of the big centres needs to override any negative historical image, to retain talent and attract further investment*' — Participant, The Fabric of Our Times roundtable, British Textile Biennial 2019

4.0 Top R&D Barriers

Parblex ® —Producer of bioplastic made using potato peels © Chip[s] Board ®

Figure 2: Summary of Challenges and Opportunities Facing UK FTT SMEs in the Next Three to Five Years



Average Mean Score Level of Challenge and Opportunity
-3.0 to -2.1 = high threat; -2.0 to -1.1 = moderate threat; -1 to 0.0 = neutral, 0.1 to 1.0 = low opportunity, 1.1 to 2.0 = moderate opportunity, 2.1 to 5.0 = increasingly high opportunity

Consumer Spending and Disposable Income

The BFTT survey reveals that consumer spending habits poses the highest threat (36%) to the future sustainable growth of the FTT sector. With the uncertainty caused by Brexit and Covid-19, it is yet to be determined how a rise in unemployment will affect long-term spending on FTT goods. Desire for value remains high among younger consumers, and low-cost retailers such as Primark experienced record queues outside stores during the first easing of lockdown rules in the UK. **As a way to compete with big online value retailers, FTT SMEs perceive growth opportunities in value-added, novelty-based, user-generated products with sustainability at their core**. This includes capitalising on climate change initiatives and emergent sustainability and compliance regulations, and online shopping business models.

As a way to compete with big online value retailers, FTT SMEs perceive growth opportunities in value-added, novelty-based, user-generated products with sustainability at their core.

'*The challenge is getting customers to spend more on our sustainable jeans, which last longer and are good for the environment*' — Annie Guerney, production and partnerships manager, Blackhorse Lane Ateliers

Funding, Tax and Business Rates

SMEs state that high taxes and business rates are an increasing threat, and the second highest in the survey (34%), to the future growth of their business over the next three to five years. This is borne out by a 2018 survey for Sage carried out by Plum Consulting, which found that SMEs in the UK and globally struggle with disproportionate tax burdens[12]. This threat is linked to the rising costs of physical rental and retail spaces, leasehold agreements and employees.

The pandemic exposed a long-standing issue around the need for business and tax rate reforms. With an increasing number of FTT retailers choosing to sell online, the Centre for Retail Research stated that, as almost 20% of total retail sales now take place online, 'it is sensible to question whether business rates are proportional, fair and efficient[13].' Interviews with intermediaries revealed the biggest concern for FTT SMEs is that most are not aware of the different types of business rates relief and tax relief they can apply for, including R&D tax relief.

Trade Policy and Brexit

The BFTT survey identifies the impact of Brexit as the third highest threat (cited by 30%) and a complicating factor facing the UK FTT sector. Despite negotiations in 2017, 2018, 2019 and 2020, the UK's trade policies regarding clothing and textiles remain unclear. The UK's fashion sector is heavily reliant upon favourable tax-free trade policies and tariff agreements with the EU. Pre-Brexit, the EU accounted for almost 80% of the sector's exports and 30% of fashion imports. SMEs fear an increase in business costs and loss of trade due to higher prices, delays with samples, border checks and increased administration.

The threat of Brexit is closely linked to FTT SMEs' fears of a shortage of creativity and skills, due to the risk of losing EU designers and workers.

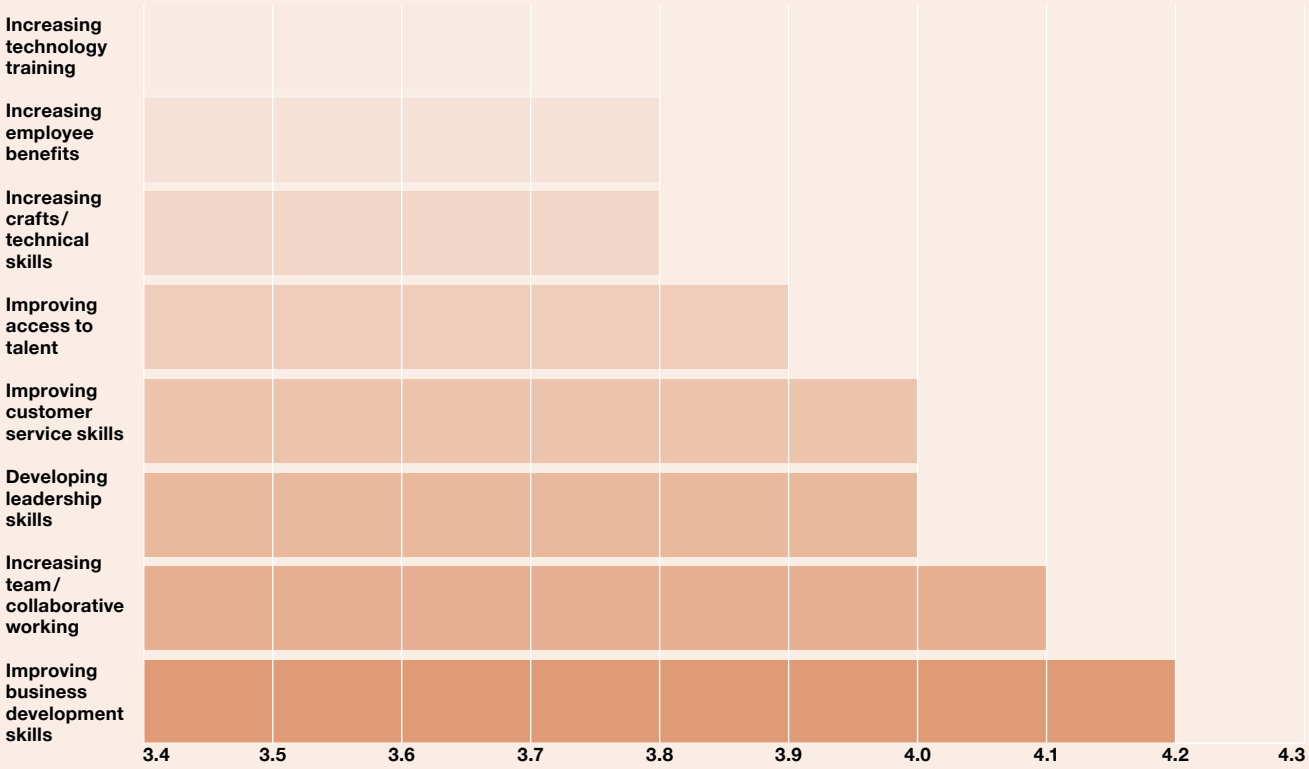
'*Brexit is the number one challenge because of the uncertainty around retaining my staff. We have tailors who are Ukrainian and eastern European. I would not know where to find skilled tailors if they go. Also, if there are trade barriers, I risk losing sales as my production is in Italy and I might have to pass on the extra costs to my customers*' — CEO, SME

FTT Skills Shortages

Stakeholders identified that an essential requirement for the growth of the UK FTT sector is addressing skills shortages (**see Figure 3, page 24**) in areas such as technology and digital training. Participants emphasised that information and communications technology skills shortages are being met by technical skills shortages, for example in making and crafts skills, such as pattern cutting by hand, as well as technical garment and

[12] Plum Consulting/Sage, 2018, A Taxing Problem: the impact of tax on small businesses, https://www.sage.com/en-gb/blog/wp-content/uploads/sites/10/2018/05/A-taxing-problem-the-impact-of-tax-on-small-businesses.pdf
[13] Centre for Retail Research, 2020, Business Rates and the Future of the High Street, https://www.retailresearch.org/future-of-the-high-street.html

Figure 3: How important are the following goals for developing your business skills capacity in the next three to five years?



digital technology skills. Deficits were attributed to slow adoption of industry skills training by higher education providers. There is also a perceived lack of interest from younger generations in technical textiles and manufacturing careers.

Stakeholders pointed out that the skills gaps should be addressed at primary, secondary, post-18 and further education levels. Since 2018, UKFT and other skills sector trade bodies have actively sought to enhance the UK's provision for highly skilled apprenticeship programmes. Despite successful lobbying by sector trade bodies for a T level[14] in crafts and design, A levels and university degrees are still perceived as more desirable by university recruitment teams and employers. The rise in recent vocational qualifications, such as T levels, and the UK government's announcement in September 2020 of plans to expand post-18 education and training with the Lifetime Skills Guarantee programme, emphasise the need for FTT universities to provide more technical and industry-specific skills training. SMEs and stakeholders also place high importance on soft skills essential for the development of the sector, and also emphasise the need for a more diverse workforce.

'*University graduates might come to me with a lot of passion, but they don't have the technical skill sets. We need to teach young people more skills required for the industry at the higher education level*' — Denise Pearson, managing director, Deni-Deni

[14] T Levels are new two-year qualifications and an alternative to A levels, other post-16 courses or an apprenticeship. The crafts and design T level is set to launch in 2023. https://www.tlevels.gov.uk/students/about

5.0 Top R&D Opportunities

Experiencing virtual reality (VR) © Alys Tomlinson

Circular and Sustainable Business Models

Circular fashion, wider apparel, textiles and technology business models are perceived as the number-one priority for SMEs due to the damaging environmental impacts of the industry. According to the BFTT survey consultation, adopting circular economy models is an important opportunity for SMEs to compete against larger and fast-fashion brands. **FTT start-ups and early-stage businesses that have a circular economy vision within their brand DNA have a strong chance of responding to increasing and future market demands for sustainable apparel, as well as the ability to establish companies that will evolve with sustainability objectives from the outset, supported by developments in technology.**

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BFTT survey interviews also reveal critical sustainability opportunities in the area of bio-design (designing new sustainable materials and textiles from bio-based sources); waste management, reduction and recovery; supply chain transparency and compliance; and products manufactured locally on demand. These opportunities are interlinked.

Despite the acceleration of these innovations in the past decade, many are at early stages of development and are not yet ready to scale. SMEs believe that UK mills and manufacturers are less able to produce sustainable fabrics at the scale required on a commercial level and at the same scale as European manufacturers. This issue is perpetuated by the limited adoption of manufacturing scaling technologies such as automation and robotics within FTT processes. UK manufacturers often rely on old or outdated equipment and assets. The UK does not currently have the capacity for large-scale manufacturing and requires significant investment in smart data-driven manufacturing and R&D.

A critical opportunity for a circular UK fashion and textiles sector is not only restoring old equipment to produce heritage textiles but also producing advanced new technical textiles and recovered or regenerated materials. Pre-Covid-19, stakeholders identified that the UK could capitalise on small-scale digital manufacturing of smart, medical and sustainable technical textiles. Technical textiles include materials and fibres used in the aerospace, automotive and healthcare sectors.

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Stakeholders identify that currently there is scope for the UK to capitalise on textile recycling (particularly the recycling of technical textiles, which requires specialised processes) through high-value recycling technologies, such as fibre-to-fibre recycling for post-consumer clothing and materials. This includes chemical recovery of polyester, nylon and cellulosic fabrics (which made up over 85% of the fibre market in 2019 and continue to rise[15]).

'*Five years or so ago, I realised that all the fabrics on the market at the time weren't sustainable and may not have been ethically made either. I knew companies like Patagonia, for example, were leading the way in recycling plastics, but in terms of our market, in cycling and triathlon, this wasn't on anyone's radar*' — Rob Webbon, CEO and founder, Presca Teamwear

Buying Locally Made Products and Brands

Central to the case for circular fashion and textile materials is a strong case for buying locally made products and brands, and bioregionalism, i.e. the idea of restoring local FTT ecosystems through their biodiversity, cultures, histories and skills. The BFTT survey reveals that UK-based production and manufacturing could gain a competitive edge if SMEs invest in the heritage of regional FTT industries, encompassing traditional and high-end heritage fabrics such as wool and linen. **With the uncertainty around Brexit and the risk of losing certain export markets, SMEs perceive showcasing the history of textiles and manufacturing in UK regions, coupled with quality production and circular FTT processes, as pivotal opportunities to attract consumers within the UK and EU, as well as globally.**

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[15] Textile Exchange, 2020 Preferred Fiber and Materials Market Report, https://textileexchange.org/2020–preferred-fiber-and-materials-market-report-pfmr-released/

processes, as pivotal opportunities to attract consumers within the UK and EU, as well as globally.

'*Scotland has a rich wool manufacturing heritage. Additionally, the point about wool is that it is biodegradable and can be produced organically. This is an opportunity for Scottish wool manufacturers and retailers to attract customers by raising awareness around respecting the high quality of regional manufacturing and, at the same time, the sustainable qualities of wool*' — Hamish Carruthers, CEO and founder, Scotcloth

A resurgence of small-scale and regional luxury materials manufacturing is perceived as an opportunity and one best realised if considered alongside ethical working conditions. Supply chain transparency is critical for the move towards a more circular and ethical fashion model. Legislation is required to support local manufacturers to meet environmental, sustainable development goals. SMEs identify that certification and traceability could help drive greater demand for local manufacturing and a circular textiles economy.

'*In the past year, more and more clients have been insisting on the production process being as sustainable as possible and that products are locally sourced, but it's difficult to find UK factories and manufacturers that have the right quality certifications. There aren't many UK factories which invest in certificates because of the costs or not looking ahead*' — Fazane Fox, CEO and founder, Fazane Fox Productions

Social Media and Marketing

SMEs identify that investing in social media marketing and online showcasing is of high importance for their business growth and R&D needs in the next three to five years. Social media marketing is the most popular way to reach younger consumers with product and brand messages.

Social media marketing is an essential tool for place-based branding, placemaking and storytelling to promote local histories and innovations in local manufacturing regions. **For SMEs operating in smaller, less-well-known areas, social media is the primary marketing tool to make connections and reach a broad network of consumers and business partners, not only to generate sales but also educate consumers on the region and local craftsmanship.**

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With the increase in sophisticated third-party functions — including video, chatbots, filters, music, Google apps and XR — SMEs identify that social media marketing requires time, effort and technical expertise. Social media technology has evolved far too quickly for SMEs to keep up with.
Even though personal contacts and word-of-mouth marketing are still crucial for growth, SMEs state that the competition to attract customers away from larger retailers is high. Social media marketing is a useful tool for growing a customer base and networks among niche groups.

At least 20% of the SMEs consulted are using social media for marketing and sales generation. Few, however, have the time or resources to invest further into skills and talent to capitalise on social media and marketing. SMEs identify functional areas for digital skills investment for the future of the sector, including social media, user-led innovation and customisation, brand protection and intellectual property regulations, mixed reality (XR) and artificial intelligence (AI). These growth opportunities point to a need for R&D funding into digital skills workshops and a greater need for multisector collaborations to help develop emerging and scarce digital skills.

'*Being on social media is imperative for small businesses now. It takes a lot of investment in terms of advertising, optimisation, and being able to customise, but helps with the visualisation of products through online retail*' — Hervé Andrieu, CEO and founder, VetiGraph Fashion Digital Solutions

Reimagining Online and Mobile Shopping

Online and mobile shopping is perceived as an essential component in driving forward a circular and sustainable FTT ecosystem. Online shopping is an opportunity to cut back on physical resources and energy costs. Online business models are also perceived as effective platforms for raising consciousness around sustainable fashion and diversity. Various surveys carried out during the pandemic have indicated that the surge in online shopping is here to stay. However, at the time of writing, there was yet to be any significant analysis of its wider environmental impact, in terms of greenhouse gas emissions, plastic waste, and whether items are ending up in landfill after a couple of wears.

Stakeholders identify that local businesses and physical stores are also vital in sustaining local communities and engaging with customers face to face. Overall, a blended model of online and offline shopping is perceived as better than physical retail alone. This points to the need for R&D investment into supporting physical retailers in transitioning to digital systems and processes. Online shopping is seen as an opportunity for SMEs to lower costs and remain competitive.

'*We don't have a retail store, at least not yet, because we're no more than two years into manufacturing and the investment in a stock collection from a working capital perspective would be significant. An online retail presence allows us to maintain our mystique, our exclusivity yet accessibility*' — Clare Campbell, founder, Prickly Thistle Scotland

6.0 Recommendations

A co-creation, crowdsourcing fashion platform, photo by Gleeson Paulino © AWAYTOMARS

BFTT considers the following findings and recommendations critical for the future growth of the wider industry and in particular SMEs.

Main Barriers	
Trade Policy and Brexit	
Barriers	A rise in business costs, sample delays and higher trade prices due to the uncertainty of tax and tariffs on imports and exports Risk of losing highly skilled technical EU workers Barriers to business planning due to the uncertainty of Brexit and Covid-19
R&D Needs	R&D funding support to help FTT SMEs transition to efficient business models R&D support with upskilling and training UK talent pipeline in technical and crafts skills Resilience and business planning guidance to support business growth post-Brexit and Covid-19
Recommendations	Relevant stakeholders should work with sector trade bodies and SMEs to lobby favourable tax and tariffs for SMEs post-Brexit Relevant stakeholders should work with sector and trade bodies to develop a range of secondary, post-18 and adult training and education programmes to support FTT SMEs at risk of skills shortage Deliver business support programmes to help SMEs transition to sell across Europe, non-European markets and local markets
Tax and Business Rates	
Barriers	Rising costs of rental property are pushing SMEs out of a competitive retail marketplace The current tax and business rates criteria do not align with a significant shift towards online retailing Affordable workspace and retail space is a critical concern across the UK, not only in London
R&D Needs	Business rates reform is required to better align tax and business rates with the shift towards online retailing
Recommendations	Local Enterprise Partnerships to support FTT SMEs with applying for R&D tax and business rates relief Provide government-supported nationwide business guidance workshops on what constitutes R&D, aligned with HMRC's scientific and technical criteria for obtaining funding Provide government-supported SME pathways to applying for R&D funding and tax relief

FTT Skills Shortage	
Barriers	A skills shortage in technology and making skills, including AI for retail, advanced manufacturing, crafts skills, including sewing and pattern cutting, soft skills in leadership, marketing and showcasing Limited access to diverse talent from under-represented backgrounds
R&D Needs	R&D investment into FTT skills programmes at different levels and stages of the skills pipeline is vital; most notably for technical education, followed by university, enterprise, apprenticeships, schools and colleges, and adult education R&D investment is required to support fashion, art and design universities to work with STEM universities and colleges across the UK's Innovation Districts Increase community engagement through outreach projects and inclusive skills programmes to attract diverse talent, including executive coaching and responsible leadership programmes
Recommendations	Integrate R&D skills insights with UK innovation and related policy. Collaborate with the AHRC CICP Policy & Evidence Centre[16] on innovation policy evaluation, and seek to engage with partners across the FTT ecosystems, including UK Fashion & Textile Association, regional and local government, and research funders Increase public awareness of the cultural contribution of fashion and textiles, and the role of technology in manufacturing, retail, consumption and recycling hosted by HEI partners and industry partnerships Grant funding support for universities to play a larger role in supporting the future FTT skills pipeline with industry and community partners
Consumer Spending and Disposable Income	
Barriers	Risk of SMEs being priced out by established and larger businesses during an economic recession Increase in value consciousness among consumers due to a decrease in consumer spending and disposable income Increased competition from large and established online retailers
R&D Needs	R&D investment is essential for a step change in behavioural initiatives that support a continuous shift in consumer mindsets away from 'take-make-dispose' models Investment is required to support circular business models, where clothes are recycled, repaired and restored, contributing less to CO2 emissions and landfill

[16] https://pec.ac.uk/

R&D Needs	R&D investment to support SME business leaders with developing new business models for value-added concepts, such as funding for new materials and textiles development; support with digital systems and processes to encourage less waste; and new fast-fashion models based on both value pricing and sustainability
Recommendations	Business guidance support for SMEs to better understand scientific and technical language, and implications of UK Sustainable Development Goals and targets for business activities Business development support for mid- and long-term financial forecasting for R&D and step-change activities Business development support for mid- and long-term resilience planning for consumer and environmental regulation shifts

Main Opportunities	
Circular and Sustainable Business Models	
Opportunities	Sustainable and circular fashion models are perceived as the number-one innovation priority for UK FTT sector growth. High-growth areas for UK FTT innovation include multisector collaboration with smart, technical and medical textiles innovation. There are emergent opportunities for local, small-scale smart manufacturing of luxury and heritage fabrics such as wool and tartan Critical opportunities for waste reduction through digital systems, energy-efficient synthetics and fibre-to-fibre recycling plants Opportunity for emergent technology to support traceability and transparency from farm to fibre, using tools such as blockchain technology and technical certifications
R&D Needs	Large-scale SME R&D investment to support FTT SMEs with patenting technology, scaling of new systems and processing of fibre-to-fibre recycling Investment into improving manufacturing quality through high-quality technical equipment, automation facilities and robotics R&D funding support to help SMEs apply for sustainability quality checks, audits and certification
Recommendations	Develop nationwide circular and sustainability awareness programmes focused on alternative materials and the potential value of waste as a resource within FTT Increase SME awareness and engagement with FTT designers and researchers working with waste and circular design Provide SME business support guidance on environmental and sustainable development legislation
Emerging Marketing and Experience Channels	
Opportunities	Social media marketing is a critical opportunity for customer engagement and brand network growth, as long as the skills, resources and time are available to leverage it effectively SMEs perceive word-of-mouth marketing as the most effective when consistently integrated with social media and omnichannel marketing The rising number of third-party applications available through mainstream social media marketing platforms is perceived as a pivotal opportunity to develop new user-generated business models based on collaboration across regions, sectors and social influencing. There is a suite of tech-basd possibilities, including video, music, AI, AR, VR, blockchain and crowd-sourcing capabilities Social media marketing is a vital tool for regional community engagement with circular fashion models, heritage branding, and raising awareness around diversity and representation within the sector

R&D Needs	R&D investment is required to support early-stage FTT SMEs with the cost of improving digital marketing capabilities, such as developing and purchasing software required for immersive experiences, capturing analytics and generating sales R&D investment into inclusive digital skills development is required for a step change in technology adoptions such as gamification; digital-only fashion; transparency; and capturing consumer data R&D funding support for FTT manufacturers and SMEs to develop digital culture and placemaking initiatives to attract local export and import markets
Recommendations	R&D investment in robust data infrastructures for the FTT sector, including customer data and privacy protection and legislation Continuous regional funding support for high-street retailers transitioning to online channels Digital marketing skills development programmes to help SMEs transition to mixed-reality capabilities
Reimagining Internet and Mobile Shopping	
Opportunities	Online and mobile shopping channels will be highly important for FTT SME business growth in the next three to five years Setting up pure play (online only) business models offsets the cost of tax and business rates for physical stores, and offers an opportunity for sustainable development Internet and mobile shopping are perceived as key drivers of growth for heritage-based brands seeking to reach out to niche target audiences across the UK and internationally
R&D Needs	R&D investment is vital to support SMEs developing sustainable, effective digital supply chain operations and logistics, from production to transportation R&D investment into business development planning is required to support physical retailers transitioning their systems and processes to hybrid online and offline business models R&D skill support investment to upskill FTT SME founders and employers with digital systems and processes such as immersive content, logistics and omnichannel marketing
Recommendations	R&D investment to support the UK-wide infrastructure of more circular models of online shopping, such as better measures and evaluation of the environmental impacts of online shopping and online consumer behaviour Online shopping security infrastructure, from customer payments to data capture R&D funding to support innovation and SME competitiveness in online retail models such as digital fashion, and AR and VR consumer experiences

Intermediaries and UK-Wide Multisector Collaboration	
Opportunities	Opportunities for job creation and sector growth in emerging FTT regions outside established centres in major cities: in the North East, North London, Belfast, Bath, Bristol, Cambridge, Cardiff, Dundee, Falmouth, Leicester, Leeds, Liverpool, Preston, Nottingham, Southampton and Swansea Multisector collaboration and innovation. The BFTT survey identifies over 648 SMEs classifying in the Companies House register under a variety of SIC categories and sub-categories, demonstrating the wider spread of the fashion industry and its feeder textiles, technology and media sectors. This has not been previously captured by data on the industry FTT university and industry collaborations, and knowledge exchange. There is increasing interest from wider-ranging intermediaries, including property developers, to support the creative industries
R&D Needs	R&D subsidies for intermediaries such as workspace providers to help support accessible workspace for FTT SMEs and multisector collaborations and networking R&D subsidies for intermediaries to support co-working spaces with technical equipment such as 3D printing technologies and small-scale manufacturing and prototyping labs R&D investment into university STEAM agenda — a collaboration between fashion design and arts and STEM universities
Recommendations	Government and Research Councils UK funding for FTT higher education institutions to collaborate with STEM-based Innovation District initiatives, for example in advanced manufacturing and development of new materials and textiles, and smart manufacturing for technical and medical textiles Review of broader SIC classifications for the FTT sector Consistent, long-term funding support for Local Enterprise Partnerships and business growth hubs to support regional sector growth

7.0 Conclusions

Carmen Hijosa is the founder of Ananas Anam, the maker of Piñatex ®, an innovative natural textile made from pineapple leaf fibre. © Ananas Anam

The Business of Fashion, Textiles and Technology (BFTT) survey consultation process determined that the UK FTT sector is expansive and currently operating across a wider range of SIC categories than earlier research suggests, demonstrating that emergent business models are moving away from traditional silos. Central to the collaborations within these networks are numerous intermediaries such as workspace providers, local government and enterprise partnerships; and wide-ranging support from universities across STEAM (Science, Technology, Engineering, Arts and Maths) disciplines, research and knowledge exchange activity. All are playing a pivotal role in this process of hybridisation, whereby the sector has become extremely sophisticated in terms of inter-sectoral collaboration. Existing classification is therefore no longer able to provide a suitable taxonomy to describe the SME activities within the sector. A revision of the application of existing SIC categories relating to the FTT sector would thus be desirable.

The UK FTT sector is expansive and currently operating across a wider range of SIC categories than earlier research suggests, demonstrating that emergent business models are moving away from traditional silos.

The survey reveals the main challenges for the UK FTT sector in the next three to five years as: changes in consumer spending; funding, tax and business rates; trade policies and Brexit; and a shortage of FTT skills. Micro businesses in the early stages of business growth (i.e. within two to three years of starting trading) are perceived as both vulnerable and resilient in equal measure — the latter in part due to their agility and manageable scale.

The survey, however, also identified significant R&D and investment opportunities in circular and sustainable business models; technological advances; wide-ranging digital tools and platforms; location-based social media and marketing; and reimagining online and mobile shopping.

The survey also highlights the significance of regional clusters across the UK and internationally, and identifies emergent UK Innovation Districts with FTT-related activity.

Micro enterprises place higher importance on the opportunities facing the sector. Yet the extent of opportunity is the same across both early-stage and established SMEs. During the pandemic, the main challenges and opportunities have been amplified. This is seen in the form of a rapid response from the UK government in terms of increased funding support for SME taxes; cross-sector R&D collaboration grants; recognition of online and social shopping; digital skills programmes; and support for buying locally and from independent brands with sustainability at their core.

The circular economy, Brexit and Covid-19 in particular have called for a reset and step change for the wider FTT industry in the UK and globally. An increasing number of designers and brands are calling to action seasonless fashion, more ethical, transparent and sustainable approaches to the overall apparel ecosystem, and a desire for new FTT business models. This, in turn, reflects a new consciousness of environmental issues among consumers that presents a financial incentive as well as a moral imperative. Generation Z, for example, who were born from the mid to late 1990s to the early 2010s, are particularly eco-aware and also open to technological solutions across the board, are still youthful. This generation will become increasingly influential and affluent as more of its members become adult and enter the workplace, and will become increasingly significant in moving forward the conversation on circular fashion.

Importantly, all these issues were designed into the consultation process embedded into the BFTT survey before the pandemic and have retained their relevance during Covid-19. The findings from a further BFTT survey and consultation underway will therefore also be critical to understanding a **UK-wide post-pandemic, post-Brexit position**.

Our emphasis on **UK-wide** throughout this report is very deliberate. The significance of the regions, in particular the regional hubs we have specifically identified, cannot be overstated, and there is genuine potential here for a joint network of provision in which regional players are as important as those based in the capital. **This closer integration of what is traditionally considered the 'core' and the 'periphery' refocuses on the importance of the links centred around the apparel sector that have been identified, established or enhanced by local UK-wide enterprise partnerships, by research and development partnerships such as the BFTT (led by University of the Arts London), and Future Fashion Factory (led by the University of Leeds) as part of the Industry Strategy-funded UK-wide Creative Industries Clusters Programme (CICP), and by established UK organisations such as the UK Fashion & Textile Association and the British Fashion Council. These networks will be key to delivering the technological and financial support, and the improved access to R&D funding the UK FTT industry needs, if it is to play its full part not only domestically but also on the world stage, in terms of establishing excellence and continuing to contribute significantly to the UK economy**.