What can we learn about the innovation performance of the Creative Industries from the UK Innovation Survey?

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Overview and content

The Creative Industries are vital to the UK economy and are known for their significant contribution to innovation, productivity, and economic growth. The mode of innovation and innovation performance however varies significantly across the different sub-sectors that make up the Creative Industries and also varies by firm size.

To account for the disparities in innovation performance, and to assess what public policy can do to support innovation, requires a better understanding of how innovation happens in different contexts. This report provides a comprehensive analysis of the dynamics of innovation within the Creative Industries, based on data from five waves of the UK Innovation Surveys (UKIS) spanning 2012-14 to 2020-22.[1] Notably, the UKIS covers businesses with 10 or more employees and does not survey firms from the Museums, galleries and libraries, and Music, performing and visual arts sub-sectors. The analysis also offers a fresh insight into how the Creative Industries compare with other sectors, including Manufacturing and Other services, regarding innovation activities and outcomes,[2] updating the findings in Gkypali and Roper (2018).

Section 2 presents the dynamic behaviours of selected innovation activities primarily over ten years including: R&D investment, product innovation, new-to-market innovation, and environmental innovations. Section 3 highlights the IP protection strategies adopted by UK businesses, with a focus on the Creative Industries and comparisons with the rest of the UK economy. Section 4 provides an overview of innovation skills. Section 5 offers a more comprehensive account of innovation activities in the Creative Industries, comparing them with the Manufacturing and Other services sectors, and Section 6 concludes the report.

1. The source is the UK Innovation Survey (UKIS). The survey is conducted every two years, and the questionnaire explores innovation activities over the last three years. UKIS 2023 is the UK's thirteenth survey of this kind and the most recent survey, conducted in April 2023, refers to firms' innovation endeavours in 2020-2022 inclusive. The UKIS sample does not include firms from the Museums, galleries and libraries, and the Music, performing and visual arts sub-sectors so all Creative Industries estimates in this report do not include these. Craft and Design sub-sectors are aggregated in the figures presented.
2. The analysis presented in this report is based on the unweighted samples from UKIS.

Key findings

- There was a general decline in the percentage of 'innovation-active' Creative Industries firms over the decade, mirroring the whole economy trend. This accelerated in the Covid-19 period but started well before. This should perhaps not be surprising given the well-known stagnation in UK productivity over this period.
- Over this period, the percentage share of Creative Industries firms engaging in activities relating to innovation was lower than in Manufacturing but much higher than in Other services. The gap vis-à-vis Manufacturing averaged 3 percentage points (pp) for R&D, 5pp for design, 4pp for product innovation, and 3pp for new-to-market innovation. However, each of these gaps widened to 10pp in 2020-22. These trends are consistent with the Creative Industries being especially impacted by the Covid-19 pandemic.
- National and regional public innovation support have been important drivers of innovation in both Creative Industries and Manufacturing, though in the most recent period for a significantly greater proportion of Manufacturing firms. This might point to a case for further investment in programmes targeted at the Creative Industries, such as the AHRC's Creative Industries Clusters Programme (CICP).
- The Creative Industries report the lowest rates of all types of innovation with environmental benefits (3% to 15% of firms), below the UK averages (5% to 17%) and for Manufacturing (7% to 27%). But general engagement with environmental innovation varies greatly across creative sub-sectors, with Architecture, and Craft and design particularly active.
- Creative Industries firms make disproportionate use of IP mechanisms, including (intuitively) copyright and trademarks, but also patents and informal mechanisms like product complexity and trade secrecy. In 2020-22, the percentage of Creative Industries firms using these different mechanisms fell back, unlike other sectors. However, it is too early to say if this reflects a reversion to pre-2018 levels or a reflection of the Creative Industries being especially impacted by the Covid-19 pandemic.
- The Creative Industries are much more likely to use specialised innovation skills than other sectors, consistent with its workforce being more generally high-skilled. This applies to obviously creative skills like graphic arts, multimedia and web design, but also to software development, engineering and applied science, and data science.
- A systematically higher percentage of firms in the Creative Industries invest in innovation – including in R&D, innovation training and design – than in Other services, but lower than in Manufacturing. The gap in R&D and design in relation to the latter opened up significantly further in 2020-22, as noted above. Notable too is that the previously significant positive gap in training investment between the Creative Industries and Manufacturing reversed and turned negative in 2020-22.
- Consistent with this finding, Creative Industries firms were significantly more likely than Other services firms to mention a lack of qualified personnel as a barrier to innovation (though just as likely as Manufacturing firms).

2

Dynamics in innovation behaviour

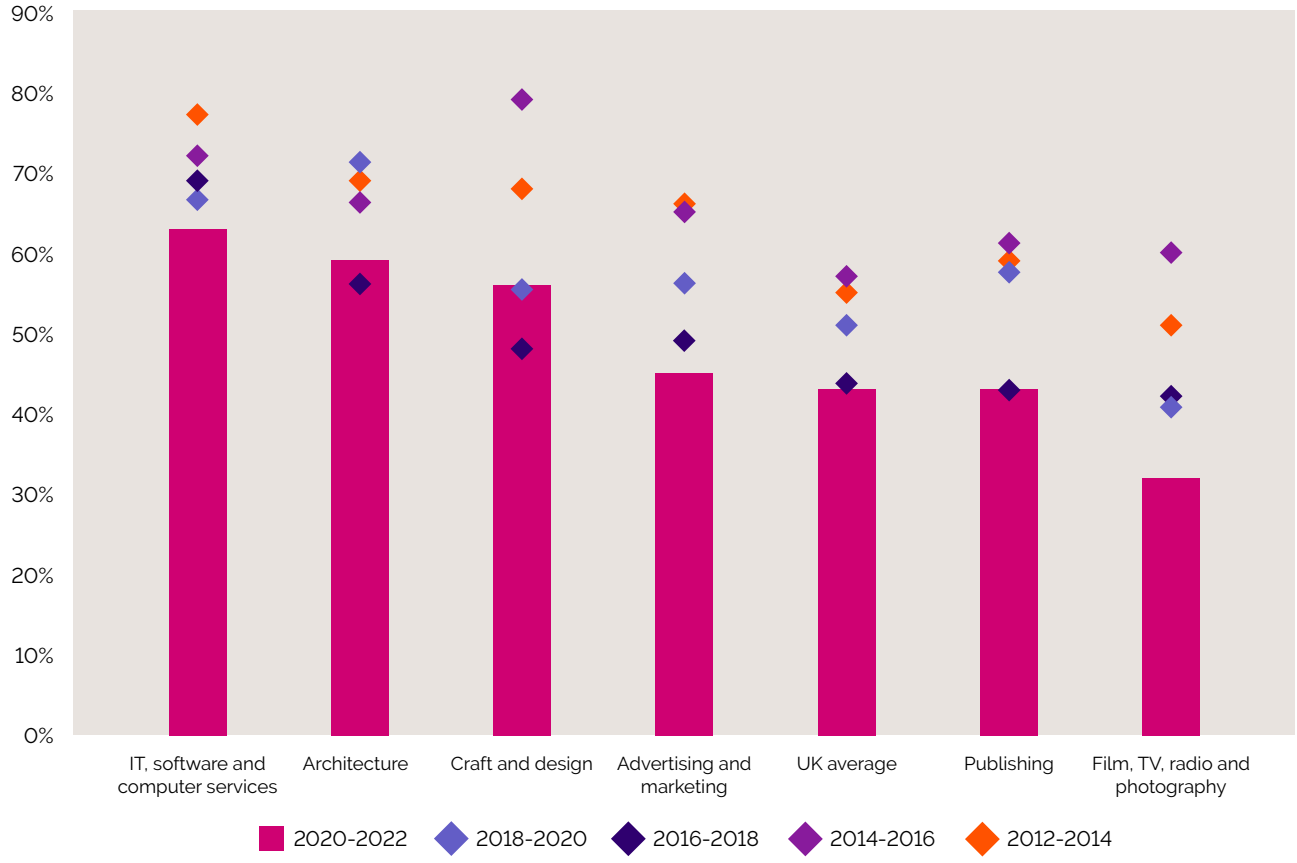
This section examines the participation of businesses in selected innovation activities within the UK economy from 2012-14 to 2020-22, with the emphasis on sectoral dynamics, particularly within the Creative Industries. Understanding the dynamics of innovation behaviour over time is crucial for identifying trends and shifts in the innovation landscape.

Figure 1 illustrates the general decline in the proportion of innovation-active businesses across all Creative Industries from 2012-14 to 2020-22. Innovation-active businesses comprise companies that, at some time during the reference period, engaged in one or more activities to develop or implement new or improved products or business processes, not only those who introduced an innovation. Over these 10 years, the Film, TV, radio and photography sub-sector experienced the most significant decrease, with a 28pp decline in innovation activity (from 60% of firms in 2012-14 to 32% in 2020-22), compared with a 14pp drop in the national average rate over the period. Similarly, the Craft and design sub-sectors saw a significant combined decline of 23pp, followed by Advertising and marketing with a 20pp decline. The Architecture and IT, software and computer services sub-sectors experienced the smallest declines, at 7pp and 9pp respectively.

Notwithstanding the falls compared with the situation ten years previously, in 2020-22, the IT, software and computer services, Architecture, and Craft and design sub-sectors still reported higher rates of innovation-active businesses than the UK national average, ranging from 13pp to 20pp higher. Conversely, the Film, TV, radio and photography sub-sector fell below the national average by 11pp. Notably, the proportion of innovative firms in the most innovative creative sub-sector, IT, software and computer services, is almost twice that of the least innovative, the Film, TV, radio and photography sub-sector.[3]

3. That said, we cannot rule out the possibility that differences in innovation measurement error between sub-sectors accounts for some of this difference.

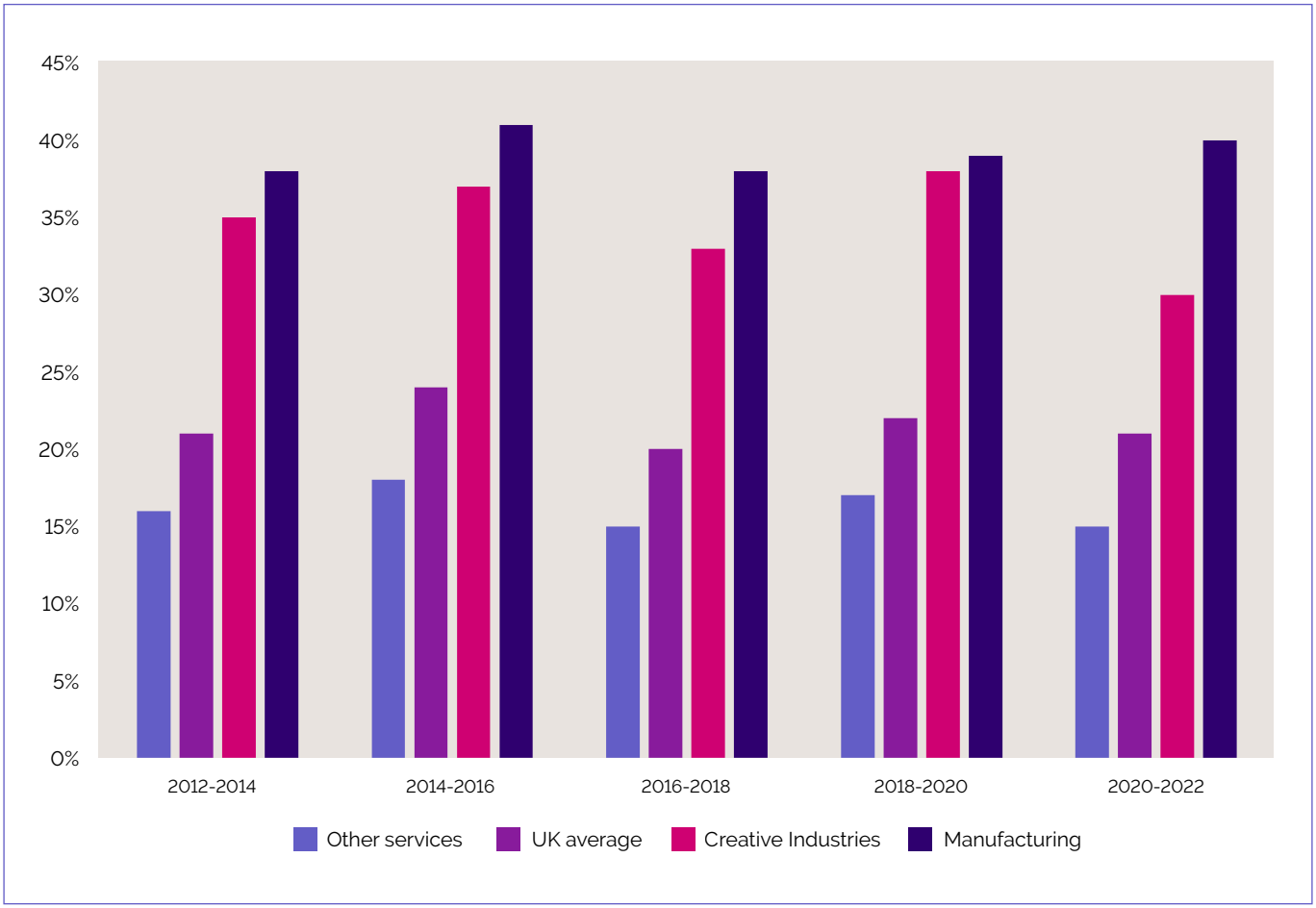
Figure 1. Percentage of innovation-active businesses in Creative Industries,[4] 2012-14 to 2020-22



Note: Innovation-active businesses comprise companies that at some time during the reference period engaged in one or more activities to develop or implement new or improved products or business processes, not only those who introduced an innovation. **Source**: UK Innovation Surveys 2012-2014, 2014-2016, 2016-2018, 2018-2020 and 2020-2022.

4. Creative Industries were classified following the DCMS Creative Industries SIC Codes (2015): https://assets.publishing.service.gov.uk/media/5c178a5340f0b60c69a28c93/Appendix_B.pdf

Figure 2. Percentage of businesses engaging in internal R&D (2012-14 to 2020-22)

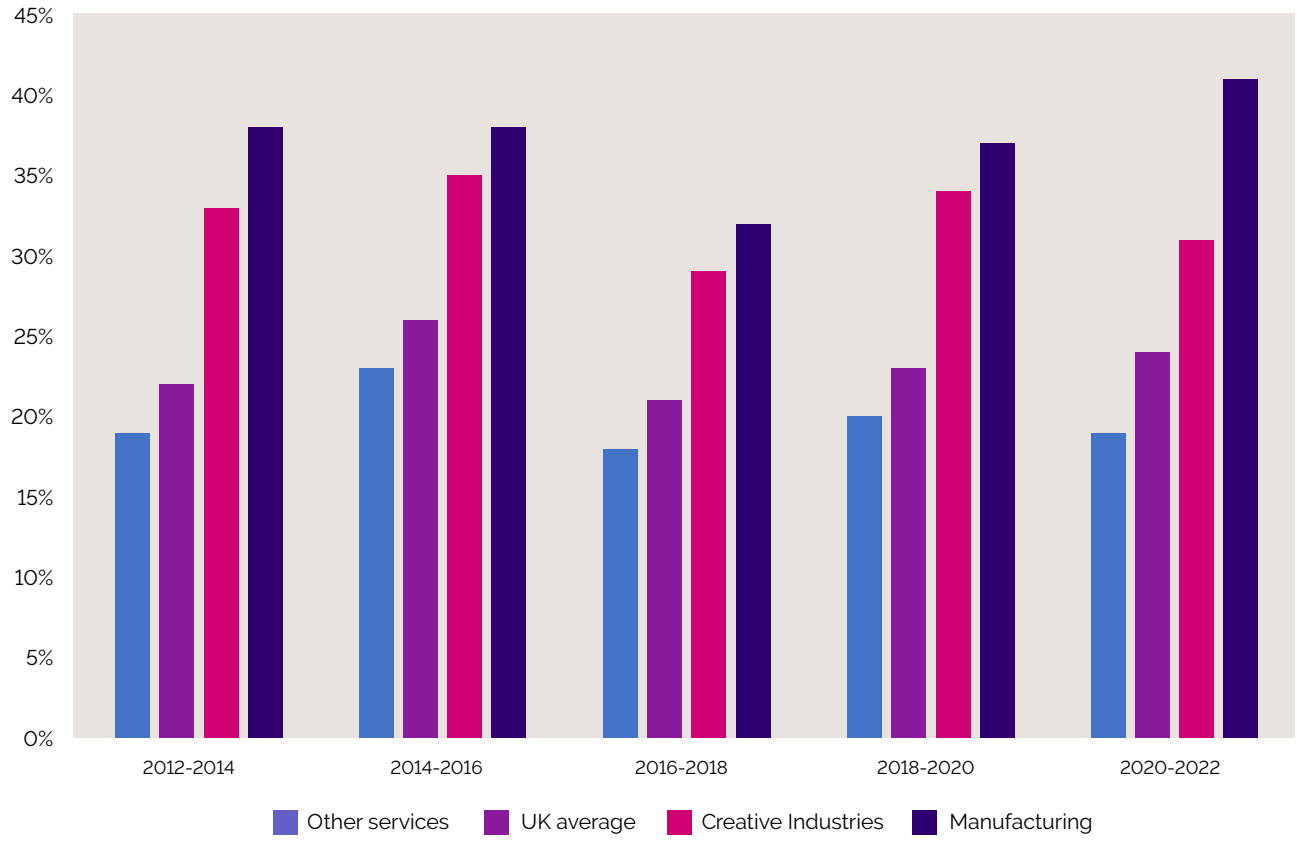


Source: UK Innovation Surveys 2012-2014, 2014-2016, 2016-2018, 2018-2020 and 2020-2022.

Figure 2 highlights the proportion of UK businesses engaging in internal R&D from 2012-14 to 2020-22. Over this 10-year period, the percentage of businesses engaging in internal R&D was broadly unchanged, but the Creative Industries experienced a decline, dropping by 5pp (from 35% in 2012-14 to 30% in 2020-22). Despite this decline, however the percentage for the Creative Industries remains much higher than the UK average and in Other services, but below that in Manufacturing. The most significant gap between the Creative Industries and Manufacturing can be seen in the most recent survey (2020-22), at 10 percentage points.

Figure 3 illustrates the percentage of businesses engaging in product or service innovation from 2012-14 to 2020-22, highlighting the evolution of innovation activities across industries over the past decade. Throughout this period, the Creative Industries again consistently and significantly outperformed Other services in relation to product innovation, though lagged behind Manufacturing, with the gap increasing further in the most recent period. That is, a notable trend is the steady increase in product innovation within the Manufacturing sector from 2018-20 to 2020-22, whereas in contrast, while the Creative Industries saw a 5pp rise in the percentage share of product innovators from 2016-18 to 2018-20, this was followed by a 3pp decline in 2020-22.

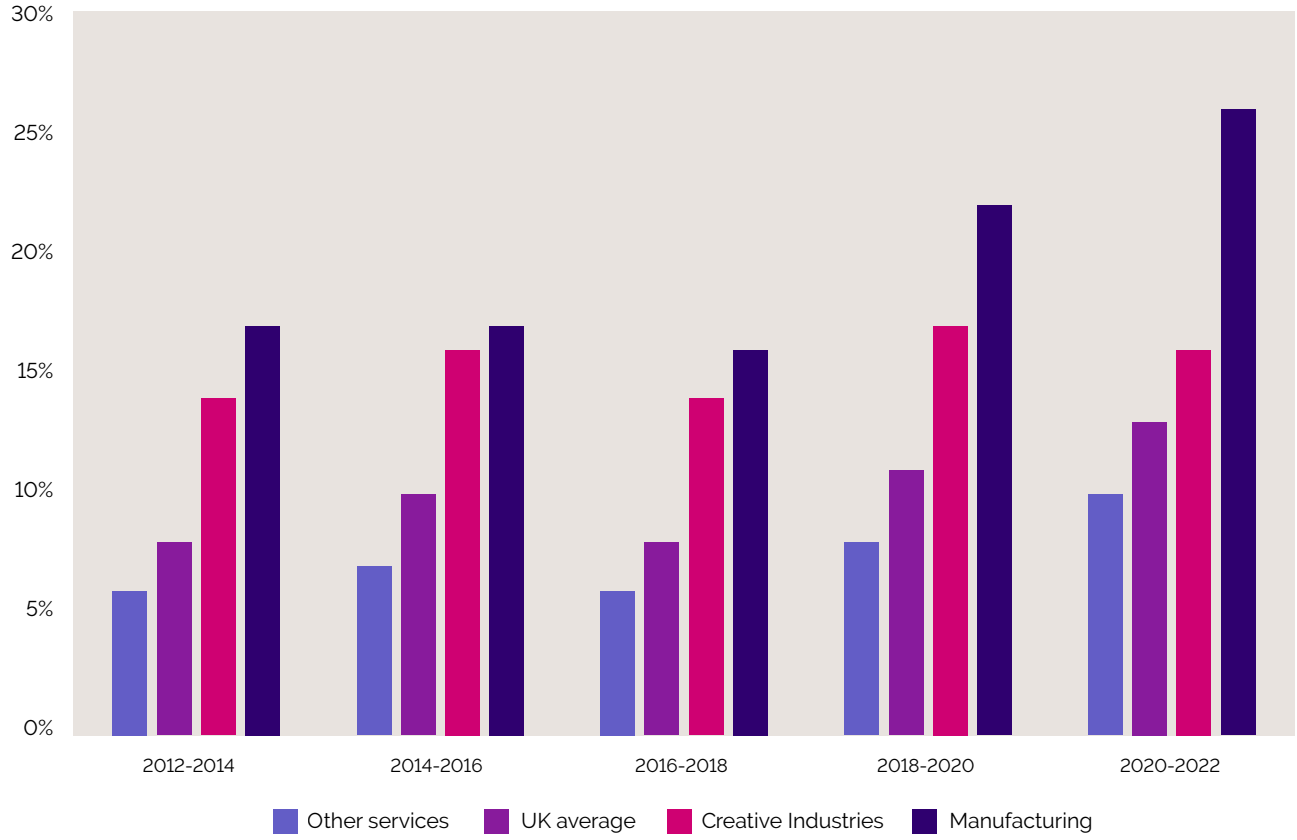
Figure 3. Percentage of businesses engaging in product innovation (2012-14 to 2020-22)



Source: UK Innovation Surveys 2012-2014, 2014-2016, 2016-2018, 2018-2020 and 2020-2022.

Figure 4 shows the percentage of businesses engaging in new-to-market (as opposed to new-to-the-firm) innovation from 2012-14 to 2020-22, which provides insights on the number of firms who are pioneering more radical innovations. The figure reveals that the Creative Industries again significantly and consistently outperformed the UK average and Other services on this measure, but lagged behind Manufacturing. Notably, the Manufacturing sector experienced the highest surge in new-to-market innovations, with the rate in 2020-22 being 9pp higher than that in 2012-14.

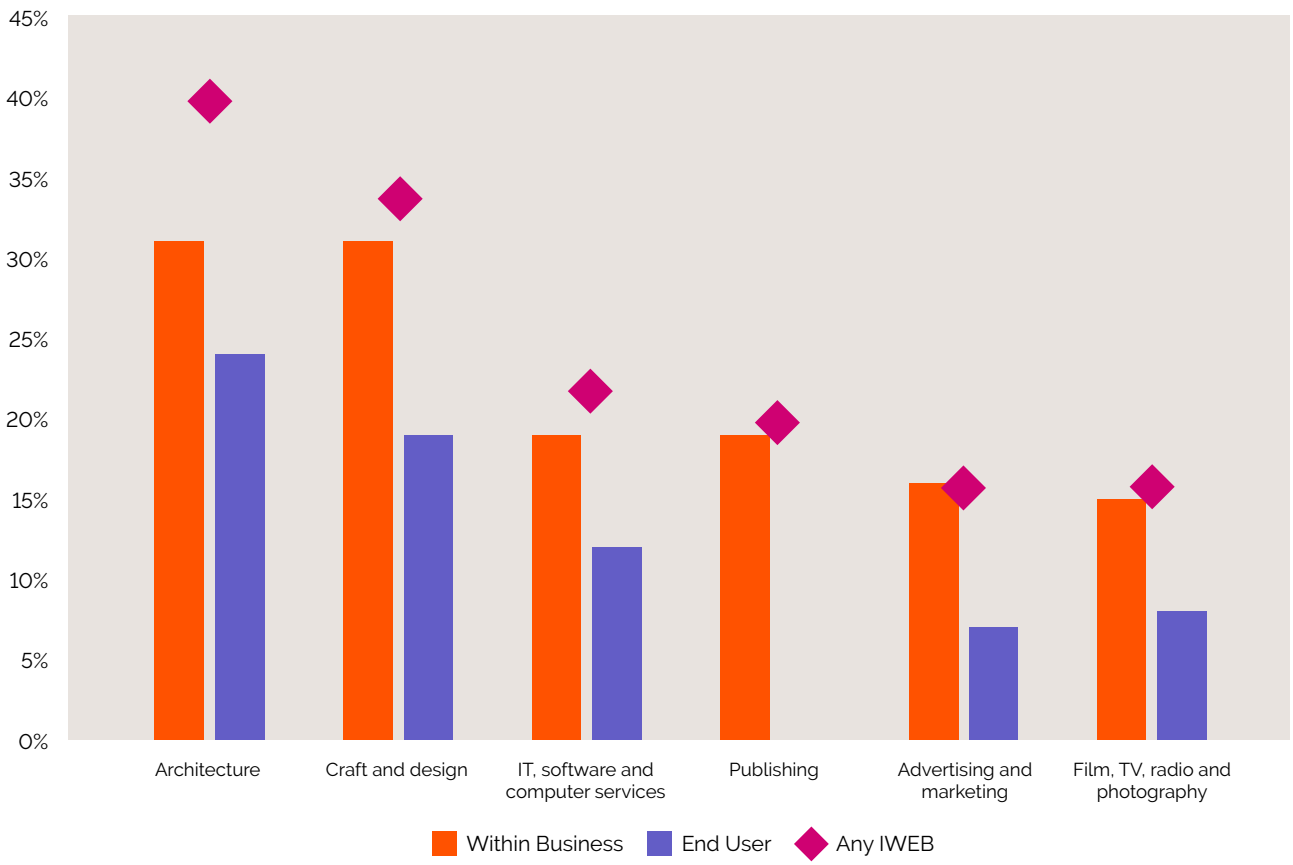
Figure 4. Percentage of businesses engaging in new-to-market innovation (2012-14 to 2020-22)



Source: UK Innovation Surveys 2012-2014, 2014-2016, 2016-2018, 2018-2020 and 2020-2022.

In view of the increasing interest in environmental innovation, Figures 5 and 6 highlight the proportion of businesses that introduced innovations with environment benefit (IWEB) in 2020-22. Innovation with environmental benefits refers to a new or enhanced product or business process of an enterprise that generates favourable environmental outcomes or reduces adverse impacts when compared with the enterprise's previous products or business processes, and that has been made accessible to potential users or has been put into practice. Environmental innovation in the Creative Industries seems to be focused more toward environmental benefit produced within the business and its supply chain (15% to 31% of businesses) compared with environmental benefits realised during use of goods and services by end users (7% to 24% of businesses) (Figure 5).

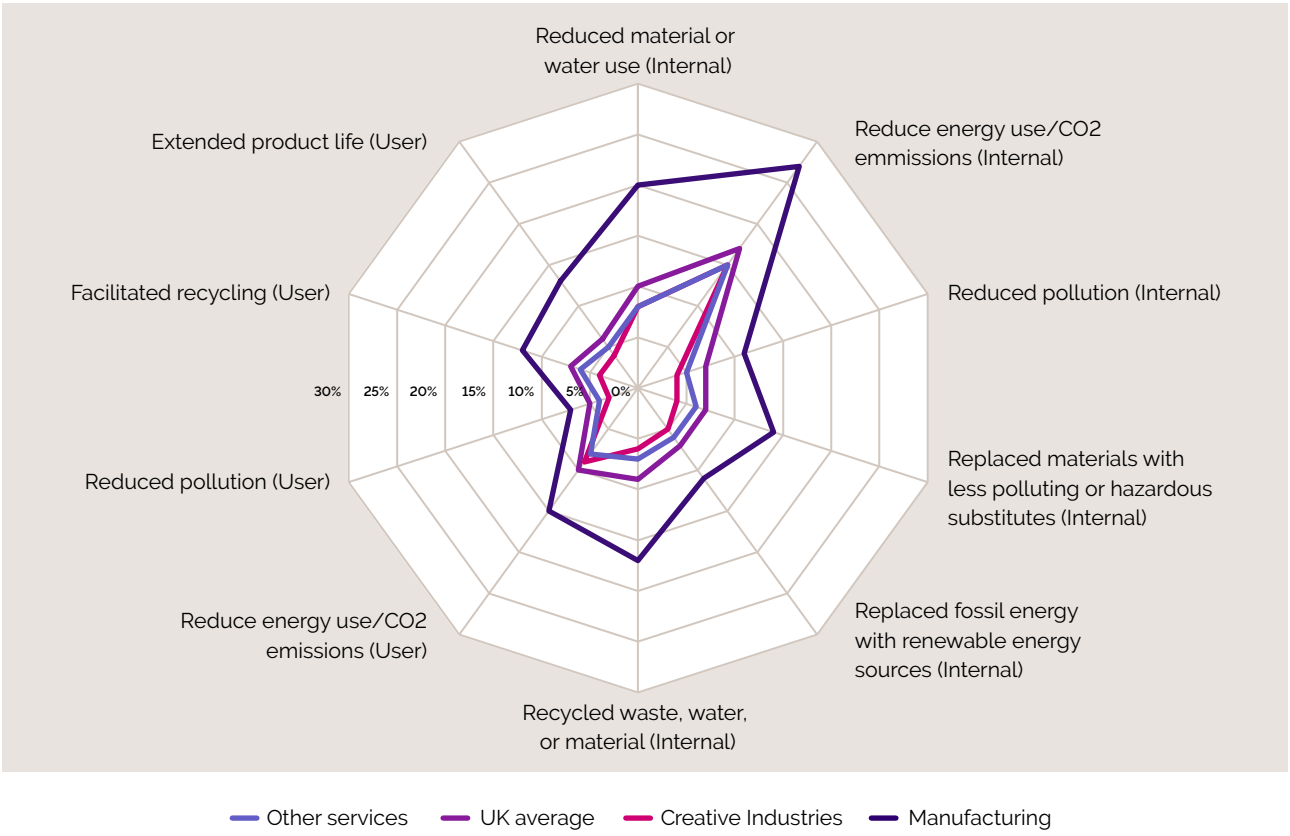
Figure 5. Percentage of businesses that introduced innovations with environmental benefits (IWEB) deemed significant, by type of IWEB, (2020-2022)



Note: IWEB can be obtained either within the business processes and supply chain or during the use of the firm's goods and services by consumers or end users. Information on IWEB from end users is not provided for Publishing due to limited observations. **Source**: UK Innovation Surveys 2020-2022.

Figure 6 provides insights on the specific types of IWEB (internal and end user) in different sectors. The Manufacturing sector easily reported the highest rate across all types of environmental benefits, with 7% to 27% of firms reporting these. In contrast, the Creative Industries reported the lowest rates for all types of environmental benefits (3% to 15%), even lower than for Other services, except in the cases of reduced energy and CO2 emissions. In this category, Other services reported the lowest rate of end user benefits (8%) and matched the Creative Industries' rate for within-business/supply chain benefits (15%).

Figure 6. Percentage of businesses that introduced innovations with environmental benefits (IWEB) deemed significant, by detailed type of IWEB, (2020-2022)



Note: IWEB can be obtained either within the business processes and supply chain (internal) or during the use of the firm's goods and services by consumers (user). **Source**: UK Innovation Surveys 2020-2022.

Table 1a highlights the Creative Industries' participation in various innovation activities during 2020-22, the most recent period for which data is currently available. Across all Creative Industries sub-sectors surveyed, business process innovation is most common, ranging from 24% to 47%. However, in the IT, software and computing services sub-sector, the highest proportion of businesses are product innovators, at 45%. Strategic innovation is also significant, with 21% to 44% of companies engaged, depending on the creative sub-sector. Architecture has the highest share of businesses reporting environmental innovation at 40%. The Craft and design sub-sectors follow closely at 34%. The two creative sub-sectors with the lowest share of environmental innovators are the Advertising and marketing, and Film, TV, radio and photography sub-sectors, both at 16%.

In terms of the innovation performance of the Creative Industries as a whole, the most common form was business process innovation at 37% in 2020-22, followed by business strategy innovation at 34% (Table 1b). Product innovation followed closely at 31%, followed by environmental innovation (22%), and new-to-market innovation (16%). The proportion of creative businesses that were product innovators increased by five percentage points (pp) in 2018-20 compared with 2016-18, but then declined by 3pp in 2020-22. This trend was also observed in new-to-market innovation within the Creative Industries.

Table 1a. Innovation activity by activity type, by creative sub-sector (Percentage of firms), 2020-2022

Creative Industries	Product innovation	Business process innovation	Business strategy innovation	Environmental innovation	Ongoing innovation activities
Advertising and marketing	24%	35%	32%	16%	14%
Architecture	31%	46%	44%	40%	22%
Craft and design	36%	47%	40%	34%	23%
Film, TV, radio and photography	14%	24%	21%	16%	6%
IT, software and computer services	45%	43%	39%	22%	34%
Publishing	27%	37%	36%	20%	15%

Note: Business strategy innovation, business process innovation, and environmental innovation were introduced in the 2020-2022 UK Innovation Survey. Business strategy innovation represents innovation in organisations, business structures, or practices to increase internal efficiency or effectiveness in approaching markets and customers. Business process innovation represents business strategy innovation and innovation in producing or developing goods and services. Environmental innovation represents innovations that deliver significant environmental benefits within the business or during a good or service use. Creative Industries, unweighted sample size = 1,031. **Source**: UK Innovation Survey 2020-2022.

Table 1b. Innovation activity by activity type (Percentage of firms), 2016 to 2022

	2016-2018		2018-2020		2020-2022	
Innovation activity	Creative Industries	Non-Creative Industries	Creative Industries	Non-Creative Industries	Creative Industries	Non-Creative Industries
Innovation-active	55%*	43%	60%*	51%	50%*	43%
Ongoing innovation activities	22%*	13%	21%*	13%	21%*	15%
New-to-market innovation	14%*	8%	17%*	11%	16%*	12%
Product innovation	29%*	20%	34%*	23%	31%*	23%
Process Innovation	19%*	15%	26%*	20%	-	-
Business process innovation	-	-	-	-	37%*	33%
Business strategy innovation	-	-	-	-	34%*	28%
Innovation with environmental benefits	-	-	-	-	22%*	26%

Note: *Means significant difference between Creative Industries' rate and that of non-Creative Industries at the 95% confidence interval. Unweighted sample sizes, Creative Industries (Non-Creative Industries): 2016-2018 = 1,038(13,002), 2018-2020 = 945(12,653) and 2020-2022 = 1,031(13,539). **Source**: UK Innovation Surveys 2016-18 to 2020-2022.

3

Intellectual property protection in the Creative Industries[5]

Adequate intellectual property (IP) protection fosters an environment where creativity and innovation can thrive, benefiting both the creators and the broader economy. By safeguarding intellectual property, businesses can secure their investments in research and development, maintain competitive advantage, and encourage continuous innovation.

Table 2 presents the IP strategies adopted by businesses in the UK from 2016-18 to 2020-22, highlighting the differences between the Creative Industries and the rest of the economy. In 2020-2022, the top four innovation appropriation strategies adopted in the Creative Industries were trade secrecy (18% of firms), copyright and product complexity (each at 17%), and trademarks (16%). The rate at which businesses used these strategies increased in 2018-20 compared with 2016-18 by between 2pp and 6pp and then declined in 2020-22 by an average of 4pp. Patents and design registration were the least used strategies by Creative Industries, each at 9% in 2020-2022.

Creative Industries firms are also disproportionate users of IP strategies. For instance, in 2020-22, the share of Creative Industries firms making use of the leading IP strategy, trade secrecy, was 7pp higher than for other industries. The equivalent shares for copyright and product complexity were 7pp and 5pp higher respectively.

5. Analysis of IP protection across Creative Industries sub-sectors is not included in this report due to small numbers of observations.

Table 2. Innovation protection strategies used by firms – Percentage of firms, 2016 to 2022

	2016-2018		2018-2020		2020-2022	
IP strategy	Creative Industries	Non-Creative Industries	Creative Industries	Non-Creative Industries	Creative Industries	Non-Creative Industries
Patents	8%	7%	12%*	9%	9%	8%
Design registration	8%*	6%	11%*	7%	9%*	7%
Copyright	15%*	7%	21%*	8%	17%*	7%
Trademarks	14%*	9%	18%*	10%	16%*	10%
Lead time advantage	11%*	6%	12%*	8%	10%*	8%
Complexity of goods and services	18%*	10%	20%*	12%	17%*	12%
Secrecy	20%*	11%	22%*	12%	18%*	11%

Note: *Means significant difference between Creative Industries' rate and that of non-Creative Industries at the 95% confidence interval. Unweighted sample sizes, Creative Industries (Non-Creative Industries): 2016-2018 = 1,038(13,002), 2018-2020 = 945(12,653) and 2020-2022 = 1,031(13,539). **Source**: UK Innovation Surveys 2016-18 to 2020-2022.

4

Innovation skills in the Creative Industries

The Creative Industries are a dynamic and diverse sector that requires a wide mix of specialised skills to drive innovation (Siepel et al., 2016). This section presents the proportion of businesses within the Creative Industries from 2016-18 to 2020-22 that employ individuals with key innovation skills including: visual and product design, multimedia and web design, STEM, and software and data management. By understanding the dynamics, distribution, and emphasis on these skills, we can gain insights into the Creative Industries' innovation capabilities, and therefore, areas for growth.

Table 3a reveals that businesses in the Creative Industries prioritise these skills to varying degrees, reflecting each sub-sector's specific demands and innovation strategies. For instance, in 2020-22, the top three skills prioritised by creative businesses in the IT, software and computer services sub-sector were software and data management, STEM, and multimedia and web design, with 39% to 65% of companies employing individuals with these skills. Businesses in Advertising and marketing, Film, TV, radio and photography, and Publishing prioritised skills in graphic arts, layout and advertising, product design, and software and data management. 15% to 52% of businesses indicated employment in these areas, depending on the sub-sector and skill. Skills in product design, graphic arts, layout and advertising, and multimedia and web design were more common among businesses in the Craft and design, and Architecture sub-sectors. 28% to 56% of those companies employed individuals with these skills, depending on the sub-sector and skill. The variation in skill prioritisation also over time, indicates that the Creative Industries are dynamic and adapt their skill requirements based on emerging trends and technologies. This adaptability is likely crucial for maintaining innovation and staying competitive.

Table 3b indicates that the shares of businesses employing individuals with innovation skills were consistently higher in the Creative Industries compared with the rest of the economy. This trend is evident across all five listed innovation skills. For example, in 2020-22, 41% of creative businesses employed skills in graphic arts, layout and advertising, compared with 20% in non-creative industries. Similarly, 39% of creative businesses employed skills in multimedia and web design, and software development and data management, outperforming their non-creative counterparts by 19pp and 17pp, respectively. Additionally, the proportion of creative businesses employing data scientists not only increased from 12% in 2018-20 to 16% in 2020-22, but the industry was also more than twice as likely as other industries to employ them. This highlights the growing importance of data-driven decision-making and innovation within the UK's Creative Industries. In summary, the Creative Industries consistently show a higher demand for innovation skills compared with the rest of the economy, underscoring the sector's reliance on specialised skills to drive their innovation and competitiveness.

Table 3a. Percentage of businesses employing individuals with listed skills, 2016 to 2022

	Graphic arts/ layout/advertising			Design of objects & services			Multimedia/web design			Software development/data management			Engineering applied science/maths/ statistics/data science*		
IP strategy	2016 -18	2018 -20	2020 -22	2016 -18	2018 -20	2020 -22	2016 -18	2018 -20	2020 -22	2016 -18	2018 -20	2020 -22	2016 -18	2018 -20	2020 -22
Advertising and marketing	46%	53%	49%	30%	27%	29%	45%	52%	41%	36%	35%	31%	19%	21%	23%
Architecture	55%	42%	38%	62%	55%	46%	35%	35%	28%	21%	27%	22%	25%	24%	19%
Craft and design	53%	46%	56%	43%	46%	52%	39%	42%	49%	24%	26%	35%	16%	19%	27%
Film, TV, radio and photography	42%	44%	37%	21%	20%	18%	44%	42%	34%	25%	23%	15%	18%	19%	14%
IT, software and computer services	28%	36%	33%	22%	25%	25%	37%	42%	39%	60%	59%	65%	37%	35%	45%
Publishing	43%	45%	52%	25%	21%	32%	49%	41%	52%	39%	33%	39%	25%	18%	23%

Note: *Means percentage values for the 2016-18 period exclude data science employees, first introduced in the 2018-20 UK Innovation Survey. Unweighted sample sizes, Creative Industries (Non-Creative Industries): 2016-2018 = 1,038(13,002), 2018-2020 = 945(12,653) and 2020-2022 = 1,031(13,539). **Source**: UK Innovation Surveys 2016-18 to 2020-2022.

Table 3b. Percentage of businesses employing individuals with listed skills, 2016 to 2022

	2016-2018		2018-2020		2020-2022	
Innovation skill	Creative Industries	Non-Creative Industries	Creative Industries	Non-Creative Industries	Creative Industries	Non-Creative Industries
Graphic arts/layout/advertising	40%*	19%	42%*	18%	41%*	20%
Design of objects and services	29%*	13%	28%*	12%	29%*	13%
Multimedia/web design	41%*	20%	43%*	19%	39%*	20%
Software development/data management	40%*	22%	40%*	21%	39%*	22%
Engineering/applied science	16%	18%	15%	16%	17%	19%
Mathematics/statistics	19%*	14%	14%*	10%	14%*	12%
Data science	-	-	12%*	5%	16%*	7%

Note: *Means significant difference between Creative Industries' rate and that of non-Creative Industries at the 95% confidence interval. Questions on employees with skills in data science were first introduced in the 2018-20 UK Innovation Survey. Unweighted sample sizes, Creative Industries (Non-Creative Industries): 2016-2018 = 1,038(13,002), 2018-2020 = 945(12,653) and 2020-2022 = 1,031(13,539). **Source**: UK Innovation Surveys 2016-18 to 2020-2022.

5

Comparative analysis of innovation activities across sectors

Table 4 comprehensively compares innovation activities across the Creative Industries with Manufacturing and Other services from 2016-18 to 2020-22. The analysis focuses on key aspects of innovation, including investment, drivers and barriers, external collaboration, and public support. We aim to highlight each sector's unique challenges and opportunities by examining these dimensions. Understanding the differences in how these sectors approach and implement innovation can provide valuable insights into their respective innovation ecosystems and inform strategies for enhancing innovation performance. This is especially in the context of a UK Industrial Strategy which aims to prioritise certain sectors, including the Creative Industries, over others (Invest 2035).

Over the whole period, we observe higher rates of Creative Industries and Manufacturing businesses investing in in-house R&D, innovation training, and design. However, unlike in Manufacturing and Other services, there was a general decline in the rate of Creative Industries companies investing in innovation in 2020-22 compared with 2018-20. This reverses the prior general increase recorded in 2018-20 from the 2016-18 period. In 2020-22, the Manufacturing sector reported higher rates of businesses investing in these three key investment activities (17% to 40%) compared with the Creative Industries (15% to 30%).

Table 4. Sectoral comparison of innovation activities - Percentage of firms, 2016 to 2022

	2016-2018			2018-2020			2020-2022		
	Creative Industries	Manu-facturing	Other services	Creative Industries	Manu-facturing	Other services	Creative Industries	Manu-facturing	Other services
Basic innovation activities									
Product innovation	29%^	32%	18%	34%^	37%	20%	31%*^	41%	19%
Process innovation	19%*^	25%	13%	26%*^	31%	17%	-	-	-
New-to-market innovation	14%*^	16%	6%	17%*^	22%	8%	16%*^	26%	10%
Ongoing innovation activities	22%^	24%	11%	21%^	22%	12%	21%*^	29%	12%
Abandoned innovation activities	4%^	3%	2%	6%^	6%	3%	6%	8%	3%
Business process innovation	-	-	-	-	-	-	37%*^	45%	31%
Business strategy innovation	-	-	-	-	-	-	34%^	34%	27%
Innovation appropriation strategy									
Patents	8%*^	15%	6%	12%*^	18%	7%	9%*^	19%	6%
Design registration	8%*^	13%	5%	11%*^	15%	5%	9%*^	16%	5%
Copyright	15%*^	12%	6%	21%*^	13%	7%	17%*^	14%	6%
Trademarks	14%^	16%	8%	18%^	18%	9%	16%*^	21%	8%
Lead time advantage	11%^	12%	5%	12%*^	15%	6%	10%*^	18%	6%
Complexity of goods and service	18%^	20%	8%	20%^	23%	10%	17%*^	25%	9%
Secrecy	20%^	21%	9%	22%^	22%	10%	18%*^	23%	9%
Skills distribution									
Graphic arts/layout/ advertising	40%*^	22%	19%	42%*^	21%	19%	41%*^	23%	20%
Design of objects and services	29%^	26%	10%	28%*^	24%	9%	29%^	27%	10%
Multimedia/web design	41%*^	19%	21%	43%*^	19%	21%	39%*^	21%	21%
Software development/data management	40%*^	25%	22%	40%*^	24%	21%	39%*^	25%	22%
Engineering/applied science	16%*^	36%	12%	15%*^	35%	11%	17%*^	40%	12%
Mathematics/statistics	19%*^	16%	14%	14%*^	11%	10%	14%^	13%	12%
Data scientist	-	-	-	12%*^	4%	6%	16%*^	6%	8%
Total Observations	**1,038**	**2,446**	**9,157**	**945**	**2,358**	**8,819**	**1,031**	**2,574**	**9,435**

Note: *Means significant difference between Creative Industries' rate and that of Manufacturing at the 95% confidence interval. ^ Means significant difference between Creative Industries' rate and that of Other services at the 95% confidence interval.

Table 4. Sectoral comparison of innovation activities - Percentage of firms, 2016 to 2022 (Cont.)

	2016-2018			2018-2020			2020-2022		
	Creative Industries	Manu-facturing	Other services	Creative Industries	Manu-facturing	Other services	Creative Industries	Manu-facturing	Other services
Innovation investment									
In-house R&D	33%*^	38%	15%	38%^	39%	17%	30%*^	40%	15%
External R&D	8%^	9%	5%	10%^	11%	6%	8%*^	11%	5%
Capital acquisition	21%*	32%	20%	38%*	48%	35%	30%*	43%	28%
External knowledge acquisition	5%^	5%	3%	6%	6%	4%	4%*	6%	3%
Training investment	19%*	15%	11%	21%*^	18%	14%	15%*^	17%	11%
Design investment	17%*^	22%	9%	22%*^	29%	12%	15%*^	25%	10%
Market introduction of innovation	5%^	7%	3%	17%^	16%	10%	12%*^	14%	8%
Innovation barriers deemed "highly important"									
Economic risk	7%	9%	7%	11%^	11%	9%	10%*	12%	9%
The direct cost of innovation	12%^	12%	9%	8%	9%	7%	10%*	12%	8%
Cost of finance	10%	12%	9%	9%	9%	8%	9%*	12%	10%
Availability of finance	11%	12%	10%	9%	10%	9%	10%*	12%	10%
Lack of qualified personnel	12%*^	9%	7%	9%^	8%	6%	13%^	13%	9%
Lack of information on tech	4%	4%	4%	4%	3%	3%	4%	4%	4%
Lack of information on the market	4%	3%	3%	4%^	4%	2%	4%	4%	3%
Dominant firm effect	5%	5%	5%	5%	5%	4%	6%^	6%	5%
Uncertainty of demand	7%	8%	5%	8%^	8%	5%	7%	9%	6%
UK regulations	5%*^	7%	7%	7%	7%	7%	10%	10%	9%
EU regulation	4%*	7%	5%	5%	7%	5%	6%*	9%	6%
Withdrawal from EU	-	-	-	7%*	10%	6%	9%*	14%	10%
Covid-19				21%	22%	19%	18%*	21%	17%
Technical, industry or service standards	-	-	-	-	-	-	6%	7%	5%
Energy price increase	-	-	-	*	*	-	9%*^	23%	15%
Total Observations	**1,038**	**2,446**	**9,157**	**945**	**2,358**	**8,819**	**1,031**	**2,574**	**9,435**

Note: *Means significant difference between Creative Industries' rate and that of Manufacturing at the 95% confidence interval. ^Means significant difference between Creative Industries' rate and that of Other services at the 95% confidence interval.

Table 4. Sectoral comparison of innovation activities - Percentage of firms, 2016 to 2022 (Cont.)

	2016-2018			2018-2020			2020-2022		
	Creative Industries	Manu-facturing	Other services	Creative Industries	Manu-facturing	Other services	Creative Industries	Manu-facturing	Other services
Innovation drivers deemed "highly important"									
Increase product range	20%*^	23%	12%	20%*^	23%	13%	18%*^	23%	12%
Enter new market	15%^	17%	8%	16%^	16%	9%	14%*^	17%	8%
Increase market share	20%^	21%	12%	21%^	23%	14%	18%*^	22%	12%
Improve product quality	29%^	30%	18%	31%^	32%	20%	28%*^	33%	19%
Improve production flexibility	15%^	17%	10%	19%^	19%	12%	17%*^	20%	11%
Increase production capacity	13%*^	20%	9%	16%*^	23%	11%	15%*^	22%	11%
Increase value added	22%^	21%	13%	24%^	23%	15%	23%^	25%	14%
Reduce per-unit production cost	9%*	22%	10%	10%*	22%	10%	11%*	24%	10%
Improve health and safety	7%*^	17%	9%	9%*^	20%	13%	8%*^	20%	10%
Reduce environmental impact	8%*	16%	8%	10%*	19%	11%	11%*	20%	10%
Replace outdated product or process	22%^	22%	15%	25%^	25%	17%	16%*^	21%	13%
Meet regulatory requirement	15%*	22%	15%	19%*	26%	19%	17%*	27%	17%
Meet technical, industry or service standards	-	-	-	-	-	-	19%*^	25%	14%
Covid-19	-	-	-	18%	18%	18%	12%	13%	11%
Energy price increase	-	-	-	-	-	-	7%*^	18%	9%
Innovation collaboration									
UK partner collaboration	27%*^	32%	20%	40%^	42%	30%	23%*^	27%	18%
EU partner collaboration	11%*^	17%	7%	19%*^	23%	11%	13%*^	16%	8%
International collaboration	14%^	12%	6%	19%^	17%	8%	11%^	12%	7%
Public support for innovation									
UK regional support	4%^	5%	2%	10%^	9%	6%	6%*^	8%	4%
UK national support	10%^	10%	4%	13%^	15%	6%	10%*^	13%	6%
EU support	1%*	3%	1%	2%*	3%	1%	1%	2%	1%
Total Observations	**1,038**	**2,446**	**9,157**	**945**	**2,358**	**8,819**	**1,031**	**2,574**	**9,435**

Note: *Means significant difference between Creative Industries' rate and that of Manufacturing at the 95% confidence interval. ^Means significant difference between Creative Industries' rate and that of Other services at the 95% confidence interval.

The UK Innovation Survey 2020-22 highlights fifteen factors businesses perceive as 'high' potential barriers to innovation, covering: costs, knowledge, market, and regulatory constraints. Among these, Covid-19 impacts and lack of qualified personnel emerged as the predominant barriers in the Creative Industries, with 18% and 13% of businesses respectively citing these factors as constraining their innovation activities. Similarly, Covid-19 impacts, lack of qualified personnel, but also the UK's withdrawal from the EU topped the innovation-constraining factors in Manufacturing, with 21%, 13%, and 14% of businesses respectively citing these factors. For both the Creative Industries and Manufacturing, there was a small decline in the percentage of companies citing Covid-19 impacts as a constraint in 2020-22 compared with 2018-20. Over the same period, there was small increase in the percentage of businesses in both sectors reporting that innovation was constrained by a lack of qualified personnel.

The UK Innovation Survey 2020-22 also identifies fifteen drivers that firms regard as 'highly important' in their decision to innovate. These factors may relate to strategies to improve product quality, diversify product range, reduce costs, and meet regulatory standards or issues arising from the Covid-19 pandemic. Improving product quality emerged as the key innovation driver within the Creative Industries, with 28% of businesses reporting this driver as 'highly important'. Other key drivers include increasing value-added (23%), meeting technical, industry or service standards (19%), product diversification, and increasing market share (each at 18%). Key innovation drivers reported by Manufacturing businesses include improving product quality (33%), meeting regulatory requirements (27%), increasing value-added, and meeting technical, industry or service standards (each at 25%).

Regarding innovation collaborations, in 2020-2022, most Creative Industries and Manufacturing firms collaborated with partners within the UK (23% and 27% respectively), followed by EU partners (13% and 16% respectively). This pattern was consistent with the collaboration trends in both sectors during 2018-20. Finally, both the Creative Industries and Manufacturing received public innovation support more frequently at the UK national level, followed by the regional level. However, in the most recent period (2020-2022) there is some evidence that significantly more Manufacturing firms benefited from national and regional public innovation support.

6

Conclusion

Reflecting the heterogeneity of the Creative Industries, the analysis of innovation activities within the sector from 2012-14 to 2020-22 reveals a complex landscape. Despite mirroring a general decline in the proportion of innovation-active businesses across UK industry, some parts of the Creative Industries have demonstrated resilience and adaptability. The IT, software and computer services sub-sector is the most innovative, significantly outperforming other creative sub-sectors such as Film, TV, radio and photography.

Over 10 years, the Creative Industries have underperformed in innovation relative to Manufacturing but have outperformed Other services. Moreover, the gap with Manufacturing widened further in 2020-22, reflecting the significant impact of the Covid-19 pandemic on the Creative Industries. The Creative Industries in general reported much lower rates of environmental innovations than other sectors, though there are important exceptions, in particular Architecture, and Craft and design.

Creative Industries firms depend heavily on IP mechanisms such as copyright, trademarks, and informal methods like product complexity and trade secrecy. However, in 2020-22, the use of these mechanisms declined, unlike in other sectors.

A consistently higher percentage of firms in the Creative Industries invest in R&D, innovation training, and design, compared with Other services, though lower than in Manufacturing. The gap in R&D and design investment between the Creative Industries and Manufacturing again widened significantly in 2020-22, and the previously significant positive gap in training investment between the Creative Industries and Manufacturing reversed and became negative over the same period. Reflecting their generally high-skilled workforce, the Creative Industries are much more likely to utilise specialised innovation skills compared with other sectors. This includes creative skills like graphic arts, multimedia and web design, as well as technical skills in software development, engineering and applied science, and data science.

Covid-19 impacts and lack of qualified personnel emerged as the predominant potential barriers to innovation in the Creative Industries. Like Manufacturing, the Creative Industries benefit from public innovation support at both national and regional levels, though there is evidence that proportionately fewer Creative Industries firms do so. This might point to a case for further investment in innovation programmes targeted at the Creative Industries, such as the AHRC's Creative Industries Clusters Programme (CICP).

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