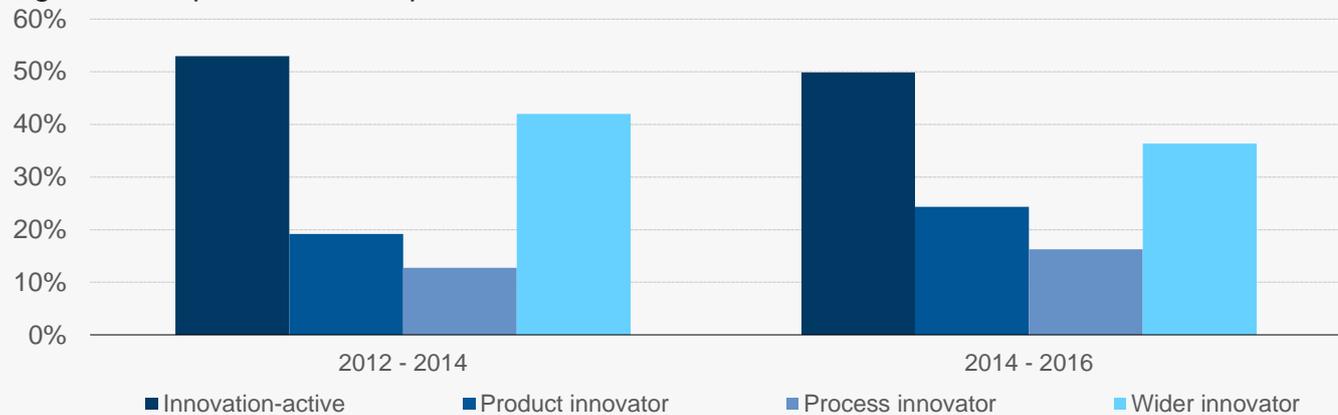




This release provides a measure of innovation activity in UK businesses in 2014-16.

Figure 1: Proportion of enterprises which are innovation active, 2012-14 and 2014-16



Unweighted base = 13,194 in 2014-16 and 15,091 in 2012-14

Half of enterprises were innovation active

The proportion of innovation active firms has fallen slightly. In 2014-16, 50% of businesses were innovation active, compared to 53% of businesses in the previous survey which covered 2012-14. This fall was the result of a decline in innovation activity among small and medium-sized businesses. However the proportion of process or product innovators rose, with nearly a third of businesses (31%) introducing new products or processes during the survey period.

Levels of innovation vary by size of business

Large firms were more likely to have innovated than small and medium enterprises (SMEs). 63% of large firms were innovation active, compared to 49% of SMEs.

Production and construction are more innovative than distribution and services

The proportion of innovation active businesses has fallen in nearly every industry. This mirrors the overall fall in innovation active businesses. Innovation activity increased in only two industries compared to the 2015 survey; the manufacture of electrical and optical equipment, from 71% to 74%, and real estate, renting and business activities from 55% to 57%.

Innovation has decreased in most regions and countries

England had the highest share of innovation active businesses at 51% with the lowest share (40%) in Northern Ireland. The South West became the English region with the greatest share of innovative businesses, at 53%, and was the only region or country to see an increase in the proportion of businesses which were innovation active.

About this release

The UK Innovation Survey (UKIS) is the main data source for business innovation in the UK. It is used widely across government and by the research community for helping the Government improve policy.

This report presents the headline findings from the UK Innovation Survey 2017 (UKIS 2017), covering the three-year period from 2014 to 2016. As the EU referendum took place in June 2016 users should not draw too many conclusions about the impact of the referendum on innovation. The survey is the UK contribution to the tenth Europe-wide Community Innovation Survey (CIS). Comparisons are made with the UK Innovation Survey 2015 (UKIS 2015), which covered the period for 2012 to 2014.

About the survey

UKIS 2017 sampled 30,479 UK enterprises with ten or more employees. The survey was voluntary, and was conducted primarily through an electronic questionnaire for the first time. Businesses that did not complete an electronic response were contacted for a telephone interview. We received a response from 13,194 businesses, giving a response rate of 43%.

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Defining Innovation

The UK definition of innovation is based on an EU-wide definition adopted by Eurostat. This definition includes any of the following activities, if they occurred during the survey period:

1. The introduction of a new or significantly improved product (good or service) or process;
2. Engagement in innovation projects not yet complete, scaled back, or abandoned;
3. New and significantly improved forms of organisation, business structures or practices, and marketing concepts or strategies;
4. Investment activities in areas such as internal research and development, training, acquisition of external knowledge or machinery and equipment linked to innovation activities.

A business that had engaged in any of the activities described in points 1 to 3 is defined as being 'innovation active'. A business that had engaged in any of the activities described in points 1 to 4 is defined as a 'broader innovator'. Finally, any businesses that had engaged in the activity described in point 3 were classed as a 'wider innovator'.

Innovation activity

Half of enterprises were innovation active

The proportion of innovation active firms has fallen slightly. In 2014-16, 50 per cent of businesses were innovation active, compared to 53% of businesses in the previous survey covering 2012-14.

Innovation activity varies by size of firm and type of activity

Table 1: Proportion of enterprises engaging in innovation activity, by size and type of activity,

Type of activity	Size of enterprise		
	SME (10-249 employees)	Large (250+ employees)	All (10+ employees)
UKIS 2014-16			
Innovation active	49	63	50
Broader innovator	51	64	51
Wider innovator	36	44	36
Activities	45	57	45
Product innovator	24	29	24
<i>of which (share with new to market products)</i>	35	36	35
Process innovator	16	22	16
<i>of which (share with new to industry processes)</i>	26	24	26
Abandoned activities	4	7	4
On-going activities	18	27	18
Scaled back activities	5	7	5
Both product AND process innovator	10	13	10
Either product OR process innovator	31	38	31
UKIS 2012-14			
Innovation active	53	61	53
Broader innovator	54	62	54
Wider innovator	42	45	42
Activities	43	50	44
Product innovator	19	27	19
<i>of which (share with new to market products)</i>	31	39	31
Process innovator	13	20	13
<i>of which (share with new to industry processes)</i>	26	24	26
Abandoned activities	4	7	4
On-going activities	17	24	17
Both product AND process innovator	8	13	8
Either product OR process innovator	24	34	24

Unweighted base = 15,091 in 2012-14 and 13,194 in 2014-16

Large firms were more likely to have innovated than small and medium enterprises (SMEs). 63% of large firms were innovation active, compared to 49% of SMEs. This trend was true for almost every innovation activity. Large firms rated more highly for all innovation activities, except new to industry process innovators.

Nearly a third of businesses (31%) introduced new products or processes during the survey period. This is an increase of seven percentage points compared to UKIS 2015. Businesses were more likely to introduce new products than new processes. Just under a quarter of business introduced a new product. Around one in six introduced a new process.

The proportion of wider innovators fell from 42% to 36%. This fall was mostly driven by SMEs. Wider innovation fell six percentage points for SMEs, from 42% to 36%. At the same time, wider innovation remained stable for large businesses.

Overall, there were a higher proportion of businesses with incomplete innovation activities – either scaled back, abandoned, or on-going. But, fewer businesses reported using wider innovations. The overall fall in innovation active businesses is a result of this fall in wider innovators.

Larger businesses were more likely to introduce wider innovation

Table 2: Proportion of enterprises that introduced wider forms of innovation

Forms of innovation	Size of enterprise		
	SME (10-249 employees)	Large (250+ employees)	All (10+ employees)
UKIS 2014-16			
Wider innovator	36	44	36
New business practices	23	30	23
New method of organising work responsibilities	19	24	20
New method of organising external relationships	11	13	11
Changes to marketing concepts or strategies	13	13	13
UKIS 2012-14			
Wider innovator	42	45	42
New business practices	27	30	27
New method of organising work responsibilities	19	25	20
New method of organising external relationships	7	11	7
Changes to marketing concepts or strategies	16	16	16

Unweighted base = 15,091 in 2012-14 and 13,194 in 2014-16

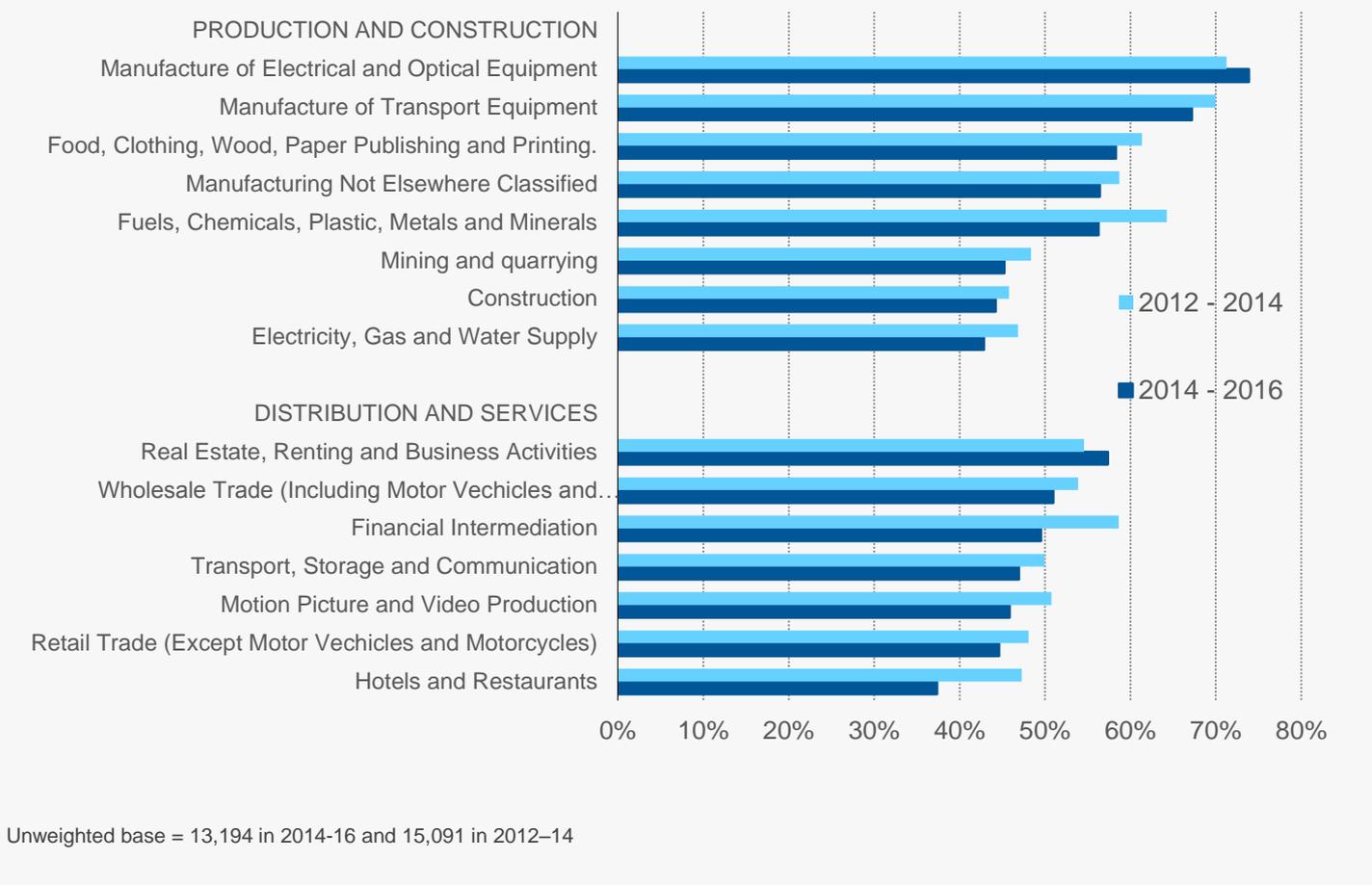
Compared to 2012-2014, wider innovation fell by six percentage points. The largest fall was in the proportion of enterprises introducing new business practices. This fell from 27% to 23%, entirely due to small and medium enterprises. The proportion of businesses introducing changes to marketing concepts or strategies fell by three percentage points. This was true for businesses of all sizes. Finally, the percentage of businesses that introduced new methods of organising external relationships increased from 7% to 11%. The overall proportion of wider innovators still fell despite this increase.

Innovation by industry

Production and construction more innovative than distribution and services

Innovation fell in most industries. Production and construction remained more innovative than distribution and services.

Figure 2: Proportion of innovation active businesses by industry, 2012-14 and 2014-16



The proportion of innovation active businesses has fallen in nearly every industry. This mirrors the overall fall in innovation active businesses. Innovation only increased in two industries compared to the 2015 survey; the manufacture of electrical and optical equipment, from 71% to 74%, and real estate, renting and business activities from 55% to 57%.

The three industries with the largest falls in innovation activities were: hotels and restaurants (47% to 37%), financial intermediation (59% to 50%), and the manufacture of fuels, chemicals, plastic, metals and minerals (64% to 56%).

The relative order of industries in terms of their innovation activities was similar to the previous survey. The manufacture of electrical and optical equipment and the manufacture of transport equipment remained the most innovative industries. Hotels and restaurants and electricity, gas and water supply remained among the least innovative.

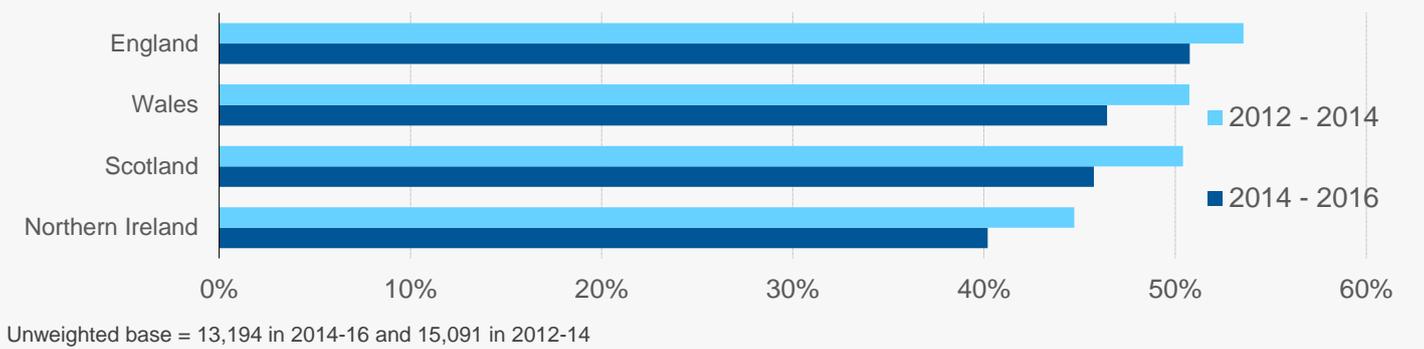
Geography of innovation

Innovation has decreased in most regions and countries

England had the highest share of innovation active businesses. The South West became the region with the greatest share of innovation active businesses.

Country level differences

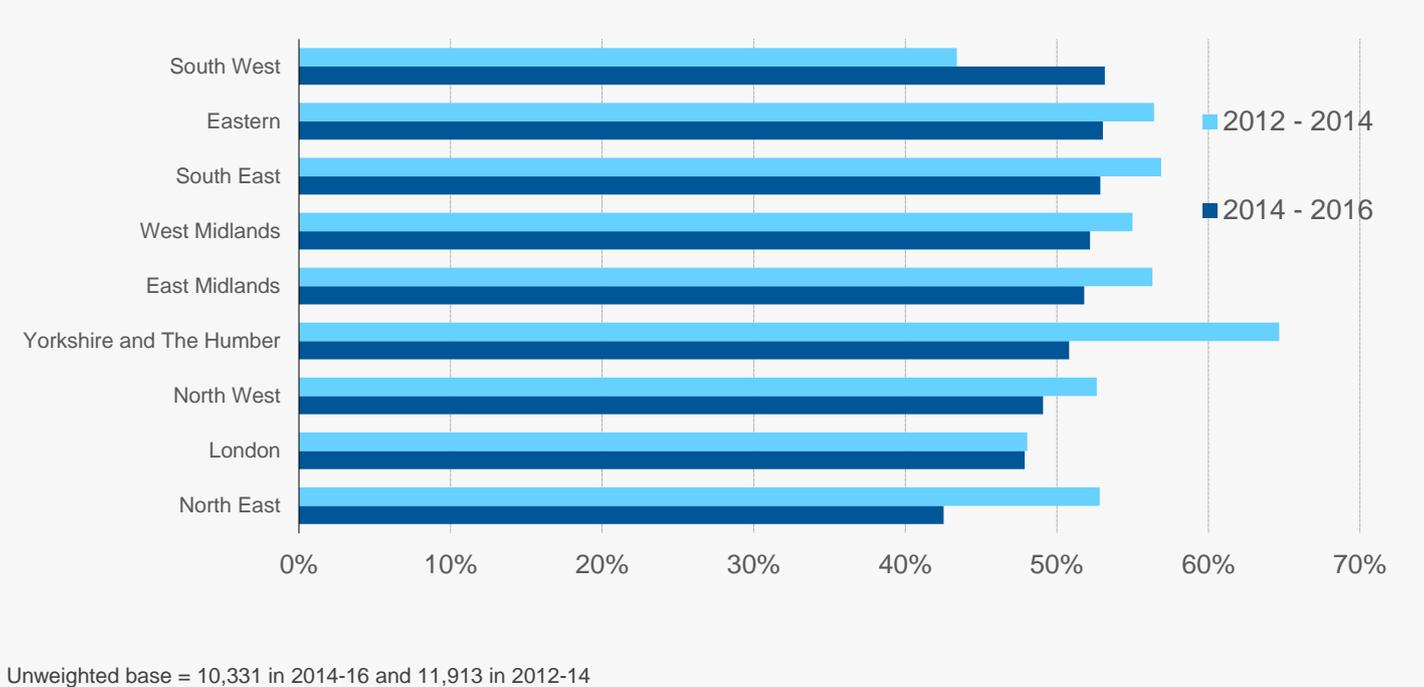
Figure 3: Proportion of innovation activity by country, 2012-14 and 2014-16



There were 11 percentage points between the least and most innovation active countries. England had the highest proportion (51%) and Northern Ireland the lowest (40%). The proportions for all four countries were lower in this survey, but the ranking remained the same.

Regional level differences

Figure 4: Proportion of innovation activity by region, 2012-14 and 2014-16



The South West was the most innovative English region, with 53% of businesses being innovation active. Innovation decreased in all regions apart from the South West which showed an increase of 10 percentage points.

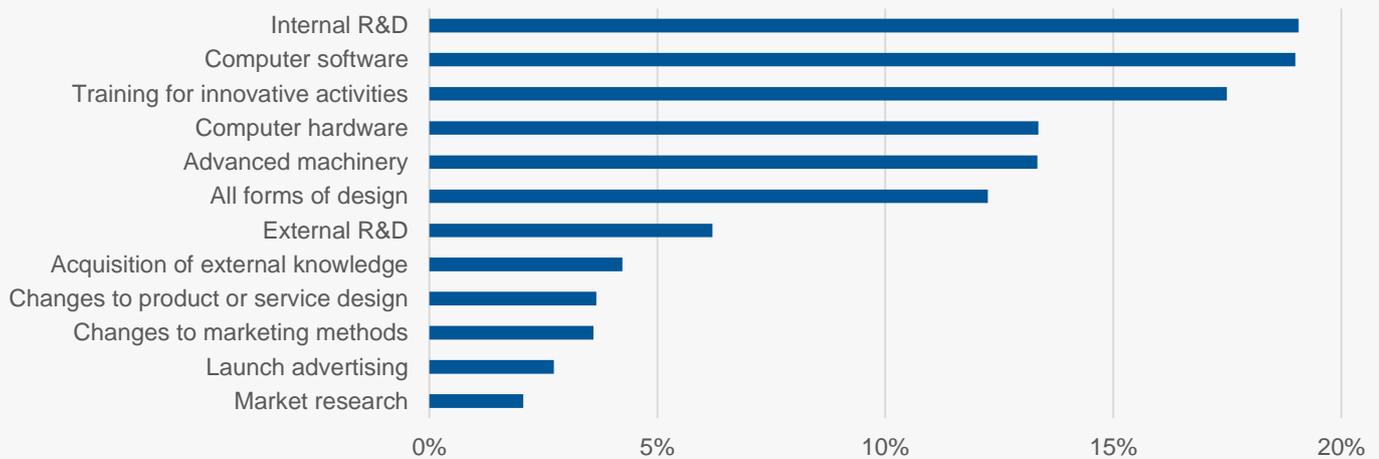
Breakdown of innovation activities

Businesses were most likely to invest in internal R&D

The proportion of businesses investing in Internal R&D has increased by 3 percentage points to 19% since the previous survey. There was a fall in the percentage of businesses investing in computers. Computer software fell from 27% to 19%, and computer hardware fell from 24% to 13%. There were also decreases in advertising and marketing activities. Changes to marketing methods fell from 12% to 4%, and launch advertising fell from 8% to 3%.

Figure 5: Innovation related activities businesses invested in (all enterprises) 2014 -2016

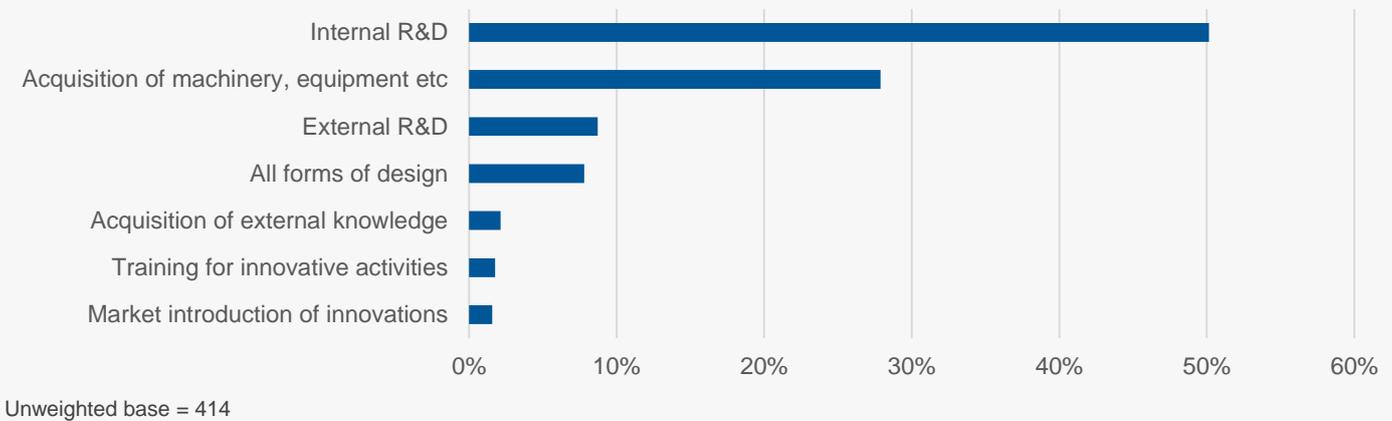
Unweighted base = 13,194



Internal R&D dominated expenditure

Half of innovation expenditure was on internal R&D. A further 28% was on the acquisition of fixed capital.

Figure 6: Innovation expenditure for the year 2016 only (proportion of total expenditure)



Unweighted base = 414

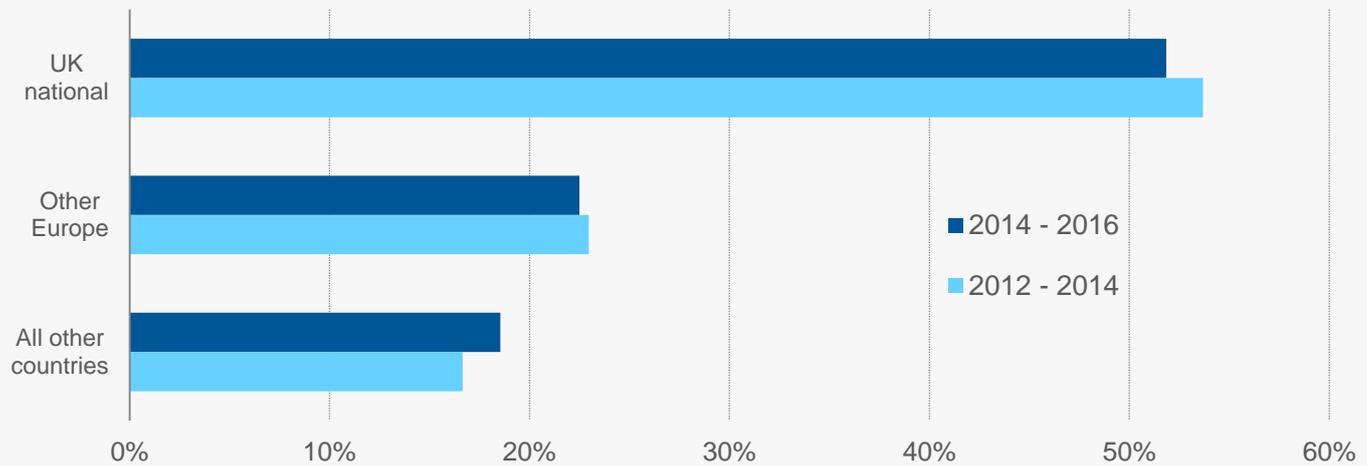
The proportion of innovation expenditure used for internal R&D actually increased since the previous survey and now stands at 50%. The share of innovation expenditure used for the acquisition of capital was the same as in the 2012-14 survey. No other category reached ten percent of total innovation expenditure.

Markets and exports

Most businesses only operate in the UK

Geographical markets

Figure 7: Geographical markets (valid responses only)



Unweighted base = 12,516

Over half of businesses (52%) operated throughout the UK, a slight decrease from the previous survey. The proportion of businesses operating in Europe remained stable, at around 23%. There was a small increase in the proportion of businesses operating internationally, outside of Europe. This rose from 17% to 19%.

**Please note that we have not published figures for the 'UK regional' market while we do further quality assurance.

Exports

Twenty-two per cent of businesses exported in 2014-2016, an increase of two percentage points from the previous survey. This figure is comparable to those in the [Annual Business Survey](#). Innovators were more likely to export than non-innovators. Nearly a third (31%) of broader innovators exported goods or services; up from 28% in the previous survey. In comparison, 12% of non-innovators exported goods or services during the survey period.

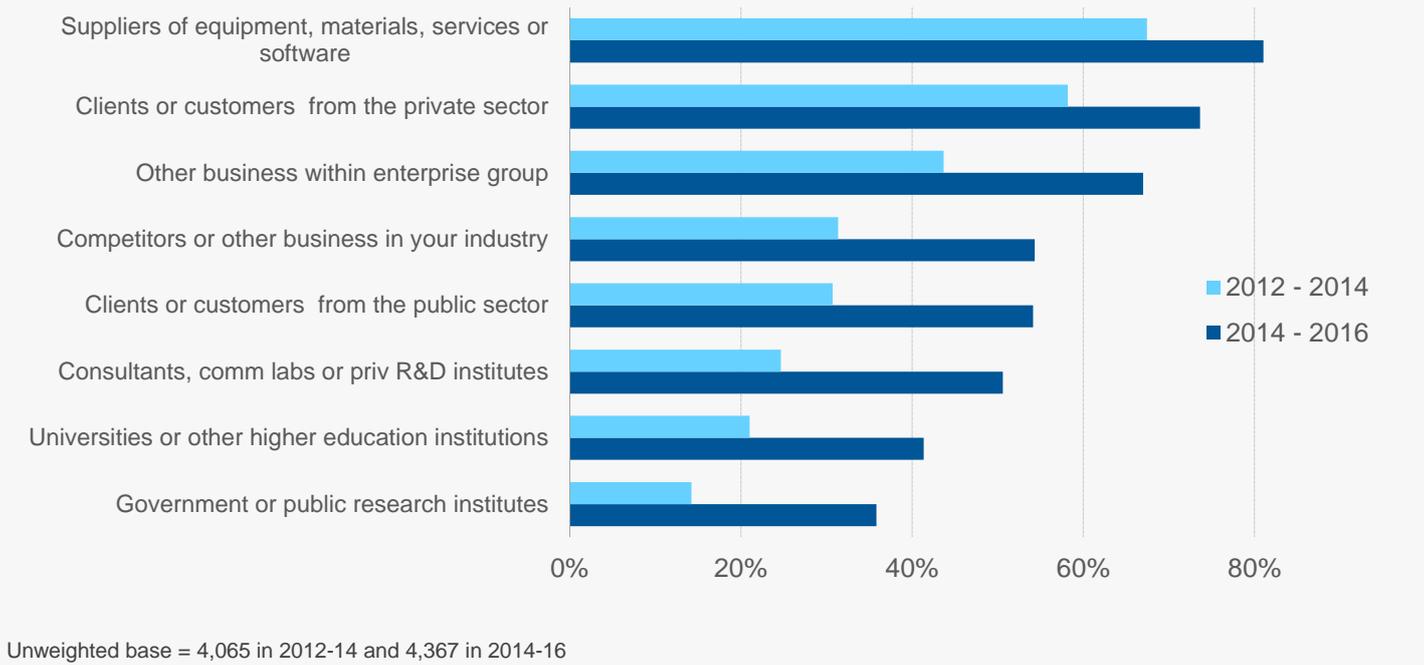
Context for innovation

More businesses now have co-operation arrangements

58% of innovation active businesses reported having co-operation arrangements, compared to 40% of businesses in the 2015 survey. There was a higher cooperation across all partnering arrangements compared to the previous survey.

Co-operation arrangements

Figure 8: Co-operation partners, 2012-14 and 2014-16



Over 80% of businesses with co-operation arrangements reported partnering with their suppliers (compared to 67% in the 2015 survey). Nearly three quarters worked with clients and customers in the private sector, and nearly 70% worked with other businesses in their enterprise group. Overall businesses were much more likely to work with private sector organisations than they were with public sector and government organisations. 36% reported working with government or public research institutes, and 41% with universities or other higher education institutions.

Sources of information

Internal sources were again rated as the most important source of information for innovation. Almost half of businesses cited internal sources, which was similar to the previous survey.

There has been an upward trend in the proportion of businesses using market sources. There was a small increase (three percentage points) in the proportion of businesses citing suppliers of equipment. The use of clients or customers for information also increased. The largest increase was in the use of competitors as an information source. This increased six percentage points from 13% in the previous survey to 19% in UKIS 2017.

Table 3: Sources of information (% of innovation active enterprises) 2014-16

Source of information	Size of enterprise		
	SME (10-249 employees)	Large (250+ employees)	All (10+ employees)
Internal			
Within the enterprise or enterprise group	49	55	49
Market			
Suppliers of equipment	28	28	28
Clients or customers from private sector	27	28	27
Clients or customers from public sector	13	15	13
Competitors or other enterprises in your industry	19	19	19
Consultants, commercial labs or private R&D institutes	6	8	6
Institutional			
Universities or other higher education institutes	4	3	4
Government or public research institutes	3	4	3
Other sources			
Conferences, trade fairs, exhibitions	7	7	7
Professional and industry associations	9	9	9
Technical, industry or service standards	12	14	12
Scientific journals and trade/technical publications	4	3	4

Unweighted base = 7,438

Institutional sources remained the least frequently used, and their rate of use was largely unchanged from the previous survey. Four per cent of businesses mentioned 'universities or other higher education institutes', and three per cent cited 'Government or public research institutes'.

In terms of 'other' sources cited the category of 'technical, industry or service standards' was mentioned by 12%, an increase from six percentage points in the 2012-14 survey.

Factors driving innovation

Businesses have a variety of reasons for innovating

Businesses cited a number of different reasons for innovating. Around four in ten businesses rated improving the quality of goods or services as highly important.

Table 4: Innovation factors (% of all broader innovators rating “high”) 2014-16

Innovation factors	Size of enterprise		
	SME (10-249 employees)	Large (250+ employees)	All (10+ employees)
Improving quality of goods or services	42	45	42
Replacing outdated products or processes	38	42	38
Increasing value added	32	35	33
Increasing market share	30	36	31
Increasing range of goods or services	29	29	29
Meeting regulatory requirements and standards	26	29	26
Improving production capacity	23	25	23
Reducing costs per unit	22	27	23
Improving flexibility for production	22	24	22
Entering new markets	22	20	22
Improving health and safety	18	21	18
Reducing environmental impact	15	19	15

Unweighted base = 7,438

As in the previous survey, businesses cited a number of important reasons for innovating.

Almost all of these factors have increased since the previous survey. Meeting regulatory requirements and standards showed the highest increase in being cited by 26% of businesses in 2017 compared to the previous survey. Most of these changes were largely due to SMEs highly rating these factors for innovating.

‘Improving quality of goods or services’ and ‘replacing outdated products or processes’ remained the top rated factors by both SMEs and large firms being cited by about two fifths of businesses. Similarly, ‘Improving health and safety’ and ‘reducing environmental impact’ were the last highly rated factors overall but their shares increased by around six percentage points compared to the previous survey.

Factors constraining innovation

Cost factors were the most important constraint for businesses

Table 5: Broader innovators' perception of potential barriers to innovation 2014-16

Potential barriers	Size of enterprise		
	SME (10-249 employees)	Large (250+ employees)	All (10+ employees)
Cost factors			
Availability of finance	14	8	14
Direct innovation cost too high	14	13	14
Excessive perceived economic risks	12	11	12
Cost of finance	14	9	14
Knowledge factors			
Lack of qualified personnel	11	6	10
Lack of information on markets	4	3	4
Lack of information on technology	3	4	3
Market factors			
Market dominated by established businesses	9	6	9
Uncertain demand for innovative goods/services	8	7	8
Other factors			
UK Government regulations	9	8	9
EU regulations	7	7	7
EU referendum	10	7	9

Unweighted base = 7,274

Compared to UKIS 2015, importance of cost factors has reduced. However cost factors were still the highest rated constraint. In general cost factors were all rated as being similarly important. 14% of all broader innovators cited 'availability of finance' but this was relatively less of an issue for larger firms. The same was true for 'direct innovation cost too high' and 'cost of finance'. Finally, 12% of broader innovators mentioned 'excessive perceived economic risks' as an important constraint.

There were small increases in some constraints. The proportion of businesses citing 'Lack of qualified personnel' has increased by two percentage points overall, and three percentage points in SMEs. There was also an increase (two percentage points) in the proportion of businesses citing 'UK Government regulations'.

Nine percent cited the 'EU referendum' as an important constraint. It is important to note that the survey period was 2014 to 2016. The EU referendum took place in June 2016. We therefore cannot draw too many conclusions about the impact of the referendum on innovation.

Skills for innovation

Innovative businesses employed higher qualified staff

The average proportion of employees with a degree or higher qualification was higher for broader innovators than for non-innovators.

Table 6: Average proportion of employees who hold a degree or higher qualification 2014-16

Potential barriers	Size of enterprise		
	SME (10-249 employees)	Large (250+ employees)	All (10+ employees)
All			
Science or engineering subjects	10	11	10
All other subjects	14	16	14
Broader Innovators			
Science or engineering subjects	14	13	14
All other subjects	17	17	17
Non-innovators			
Science or engineering subjects	4	7	5
All other subjects	10	14	10

Unweighted base = 13,194

Amongst innovative businesses, one in seven (14%) employees had a science or engineering qualification, and one in six (17%) had a qualification in a non-science subject. This is a slight increase from the 2015 survey, where the equivalent figures were 12% and 15%. Only five per cent of staff employed by non-innovators had a science or engineering qualification, and one in ten had a qualification in a non-science subject. This is the same as in the previous survey.

Overall, more than one in ten employees held a degree or higher qualification. Ten percent had a qualification in a science or engineering subject, and 14% in all other subjects.

Contact information

We welcome questions and feedback. Please contact us at business.statistics@beis.gov.uk or write to us at:

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Changes in this release

This was the first innovation survey using an electronic questionnaire. **Due to the change in mode some responses may be different to previous surveys. Care should be taken when drawing comparisons to other releases.**

Where to find more

International Comparisons

The UKIS data is used for international statistics on innovation:

- EU-wide statistics are published by Eurostat in the [Community Innovation Survey](#)
- Further international comparisons are published by the OECD in their [Innovation Indicators](#)

Research and development

The Office for National Statistics (ONS) publishes detailed statistics on research and development:

- [Business enterprise research and development \(2016\)](#)
- [Gross domestic expenditure on research and development \(2016\)](#)
- [UK government expenditure on science, engineering and technology \(2015\)](#)

Business statistics

For more general business statistics, please see:

- [Business population estimates](#) for an estimate of the total number of registered and unregistered businesses in the UK
- [UK business: activity, size and location](#) for UK businesses by legal status, industry, region, employment and turnover size bands

Future releases

More detailed findings from the innovation survey to be published in June/July 2018.

This will be followed by a statistical annex with further data in autumn 2018.

Detailed microdata will be made available through the ONS [Secure Research Service](#).

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