Department for Business Innovation & Skills

FIRST FINDINGS FROM THE UK INNOVATION SURVEY 2013 (REVISED)

Knowledge and Innovation Analysis

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Contents

First findings from the UK Innovation Survey 2013

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Summary

This report presents the initial analysis of the 2013 UK Innovation Survey (UKIS 2013), which is the second survey using a sample based on the Standard Industrial Classification 2007 (SIC 2007). This enables a more consistent comparison with the 2011 survey data in the time series. The survey is mainly postal but almost two fifths (39 per cent) of total responses (14,487) were collected by telephone interview. This compares favourably with the UKIS 2011 in which around half of the survey responses were collected by telephone interview. As it might be expected, most of the telephone interviews came from non-innovative enterprises.

Following an overview of the data collection and methodology, this report goes on to discuss the key innovation statistics. After examining in which markets and regions innovative UK businesses are operating, the report then discusses collaborations and sources of information, factors driving innovation and barriers to innovation.

This report also includes highlights from analysis of the panel data (overlap) between the 2011 survey and its predecessors from 2009 and 2007. It concludes with a comparison of this survey with the last three surveys from 2011, 2009 and 2007. This First Findings report will be followed by a Statistical Annex for UKIS 2013 which will contain detailed tables and will be published later in the year.

Introduction

This report presents the first findings from the UK Innovation Survey 2013, covering the three-year period from 2010 to 2012. It is the UK contribution to a Europe-wide Community Innovation Survey (CIS). This is the eighth Europe-wide CIS. CIS was originally conducted every four years, but since 2005 it has been conducted every two years. The 2013 survey is the fourth one on the biennial cycle.

The UK Innovation Survey 2013 sampled 28,365 UK enterprises with ten or more employees. The survey was voluntary, and was conducted through both a postal questionnaire and telephone interview for businesses that had not yet completed a postal

response. With over 14,000 enterprises in the achieved sample, the survey had a 51 per cent response rate. The results in this report are based on weighted data in order to be representative of firms. The responses were weighted back to the total business population of those in the Inter-Departmental Business Registration (IDBR). They were not weighted by factors which would give more weight to larger firms, such as employment or turnover.

As in the 2011 survey, the 2013 survey also used a sampling format based on SIC 2007 which is an EU legislative requirement regarding the collection of innovation statistics. Similarly, the sample selection was conducted by ONS and it followed the same sampling methodology as the 2011 survey. As a result, the data in this survey are much more comparable to the data from the 2011 survey.

The Department for Business, Innovation, and Skills (BIS) would like to thank all the businesses that completed the survey form either over the phone or by post. The UKIS continues to provide a means to measuring the level, types and trends in innovation activity within the UK. This data source contributes to our understanding of the constraining factors faced by businesses, across all sectors and size classifications, to innovate and other limitations in the system. It provides the empirical evidence to support policy measures.

Although the sample size of the panel data (respondents also common to the 2011, 2009 and 2007 surveys) is significantly reduced to 945 businesses, this panel size is in line the previous four waves' panels. Panel element in the survey series remains a valuable resource for both government and academic users alike. However, one needs to bear in mind that the changes in the sampling and collection methodology from the 2011 survey onwards would mean any comparisons made with the 2009 and 2007 provide a broad indication of changes over the mentioned time period only.

In December 2011, the Department published its 'Innovation and Research Strategy for Growth[1]'. The 2014 Innovation Report[2] was published in March 2014. The Autumn Statement 2013 emphasised government's commitment to ensure that the UK's capabilities remain world-leading while playing a key role in economic growth and scientific excellence. The Government will produce a 'Science and Innovation Strategy' for Autumn Statement 2014. Central to this strategy will be a roadmap of how the government's long-term commitment on science capital will deliver the research and innovation infrastructure.

Through the harmonised questions in CIS, the UK Innovation survey data are also comparable with other countries. This provides useful international benchmarking for the UK performance in this area.

[1] https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/32450/11-1387-innovation-and-research-strategy-for-growth.pdf

[2] https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/288716/bis-14-p188-innovation-report-2014-print-copy-final.pdf

The majority of the survey questions are concerned with innovation through new and improved products and processes (technological innovation) and with the investments that develop and implement them along with changes in business structures, management and marketing practices (non-technological innovation). The survey also asks businesses about the drivers to innovate as well as their perception of barriers to innovation.

The questionnaire used for the survey remained mostly the same as in the 2011 survey. There was a new question added about what the 'largest market' was for businesses in terms of turnover. There was also an additional question concerning the most valuable co-operation partner for businesses.

The composition of the 2013 achieved sample was similar to the last survey, with 22 per cent of sample consisting of large firms, compared to 21 per cent in the last survey. Whilst 50 per cent of the achieved sample were from businesses with 10 to 49 employees, 28 per cent came from enterprises with 50 to 249 employees.

The 2013 survey is the second one conducted using a sample based on the Standard Industrial Classification 2007 (SIC 2007). The consistencies in sampling and survey methodologies, such as the use of SIC 2007 and telephone interviews to boost the postal responses between the two surveys provide us with the ability to make more direct comparisons across surveys.

1. Innovation activity

Innovation takes place through a wide variety of business practices and a range of indicators can be used to measure its level within the enterprise or in the economy as a whole. These include the levels of effort employed (measured through resources allocated to innovation) and of achievement (the introduction of new or improved products and processes). This section reports on the types and levels of innovation activity over the three year period, from 2010 to 2012[3] and makes some comparisons with the results obtained from the previous survey conducted in 2011.

The definition of innovation activity[4] here includes any of the activities described below that enterprises were engaged in during the survey period. These activities are as follows:

1. Introduction of a new or significantly improved product (good or service) or process;

2. Engagement in innovation projects not yet complete or abandoned;

[3] All results are grossed up (based on broader sectoral groupings) to the business population, and all figures quoted relate to UK Innovation Survey 2013, unless stated otherwise. Some figures may differ slightly from those in the Statistical Annex which are based on more detailed sectoral weights.

[4] The UK definition used here follows the definition adopted by Eurostat. The EU-wide definition of innovation active is as follows: Introduction of a new or significantly improved product (goods or service) or process; Engagement in innovation projects not yet complete or abandoned; New and significantly improved forms of organisation, business structures or practices and marketing concepts or strategies. It excludes expenditure and activities linked to innovation.

3. New and significantly improved forms of organisation, business structures or practices and marketing concepts or strategies

4. Activities in areas such as internal research and development, training, acquisition of external knowledge or machinery and equipment linked to innovation activities[5].

Table 1: Enterprises engaging in innovation activity, by size and type of activity, 2010-2012*

Per cent

Type of activity	Size of enterprise		
	10-250 employees	250+ employees	All (10+ employees)
2013			
Innovation active	45	50	45
Innovation active (old definition)[6]	*42*	*48*	*43*
Broader innovator	46	51[r]	46
Wider innovator	37	39	37
Activities	39	43	39
Product innovator	18	23	18
of which (share with new-to-market products)	*44*	*50*	*44*
Process innovator	10	15	10
of which (share with new-to-industry processes)	*23*	*26*	*23*
Abandoned activities	4	5	4
On-going activities	15	19	15
Both product AND process innovator	7	10	7
Either product OR process innovator	21	28	22
2011			
Innovation active	37	42	37
Innovation active (old definition)	*36*	*41*	*36*
Broader innovator	39	44	39
Wider innovator	31	35	31
Activities	33	38	33
Product innovator	19	23	19
of which (share with new-to-market products)	*46*	*50*	*46*
Process innovator	10	17	10
of which (share with new-to-industry processes)	*27*	*24*	*26*
Abandoned activities	4	6	4
On-going activities	7	9	7
Both product AND process innovator	7	13	8
Either product OR process innovator	22	28	22

** = Unweighted base = 14,487; r = revised.*

[5] As in the 2011 UKIS, the questions in Section C 'Context for Innovation' of the questionnaire are only asked if the respondent said yes to Q3, 4, 6, 10 or 13 (i.e. strategic innovator, innovation activities, product innovator, process innovator or abandoned/incomplete innovation) in Section B 'Innovation Activities' of the questionnaire. This differs from survey routing used in surveys conducted before the UKIS 2011.

[6] Different survey routing was applied for surveys conducted before the UKIS 2011 and the proportions reported here refer to the definition used prior to 2011, hence referred as the 'old definition'.

For the purpose of the UK Innovation Survey and in line with the European-wide Community Innovation Survey, a business that had engaged in any of the activities described in points 1 to 3 given above is defined as being '**innovation active'**.

For the purpose of this report, a business that has engaged in any of the activities described in points 1 to 4 given above is defined as a **broader innovator**. The businesses classed as a **wider innovator** are those that have engaged in the activity described in point 3 given above.

The results, given in Table 1 show notable improvements on most of the innovation activities that businesses had engaged in throughout the reference period of 2010 and 2012. It is inevitable that economic conditions have an impact on the way businesses behave. In the last survey, the economic conditions were much more unfavourable and this had been reflected in the findings of the 2011 survey which had the reference period of 2008 and 2010.

As Table 1 shows, the number of 'innovation active' (defined above) firms increased over the survey period; 45 per cent of enterprises were found to be 'innovation active', compared to 37 per cent of businesses in the 2011 survey. This partly reflects the change in wording of how 'innovation activities which were not yet complete' were defined in the questionnaire. In the previous survey, this was referred as 'incomplete' but the 2013 questionnaire defined this as 'still on-going at the end of 2012. The share of large firms (those with more than 250 employees) classified as 'innovation active' was higher than small and medium enterprises (SMEs): 50 per cent vs 45 per cent of SMEs. The same difference also existed between large firms and SMEs in the 2011 survey.

In line with the increase in the proportion of innovation active businesses, the number of firms defined as 'broader innovator' also increased to 46 per cent from 39 per cent in the 2011 survey. Interestingly, the share of SMEs in this category was higher than that of the large firms: 46 per cent of SMEs vs 51 per cent of large firms. There was a decline in the share of large firms from 44 per cent in the 2011 survey.

There was also an increase on the wider innovator indicator (firms engaging in wider/non-technical innovations, described in point 3 above) from 31 per cent in the 2011 survey to 37 per cent given above in Table 1. The difference in proportions of SMEs and large business was smaller in this survey period than the previous one; 37 per cent of SMEs reported in engaging in wider innovations, compared to 39 per cent of large firms. This compares to 31 per cent of SMEs and 35 per cent of large businesses in the 2011 survey.

Product innovation remained broadly unchanged, with 18 per cent of firms reporting engagement in product innovations (compared with 19 per cent in the 2011 survey). Almost half of product innovations (44 per cent) were new to the market over this survey period, as compared to 46 per cent in the previous survey. The share of large firms having products new to the market stayed exactly the same at 50 per cent. However, this share was higher than that of SMEs in both this and the 2011 surveys (44 per cent and 46 per cent, respectively).

Furthermore, process innovation remained exactly the same. One in ten firms reported engaging in process innovations. Whilst the share of SMEs reporting engagement in

process innovations stayed the same over two survey periods, the share of large firms showed a slight fall from 17 per cent in the 2011 survey to 15 per cent.

Almost a quarter (23 per cent) of process innovations were new to the industry processes, showing a decline from 26 per cent in the previous survey. Whilst there was a notable fall for SMEs from 27 per cent in the previous survey to 23 per cent, large firms reported a slight increase (24 per cent to 26 per cent) for having process innovations new to the industry.

In most businesses[7], both goods and services were mainly developed within the business. When asked whether the goods or services were developed mainly by their own business or enterprise group, 41 per cent of respondents said their 'goods' were developed mainly by their own business (50 per cent said their 'services' were developed mainly within the business). These figures were broadly in line with the previous survey's findings in which 43 per cent said 'goods' and 49 per cent said 'service innovations' were developed within their business.

When asked about developing goods or services in partnership with other businesses/organisations, 17 per cent said their goods were developed mainly in partnership with other businesses. The corresponding figure for services was 14 per cent. One in ten businesses said their goods were developed mainly by other businesses or organisations. The corresponding figure for services was also ten per cent. These figures were broadly in line with those reported in the 2011 survey.

Although the findings showed a similar proportion of abandoned innovation projects to the last period (four per cent in both surveys), the proportion of on-going innovation activities went up significantly from seven per cent to 15 per cent. The share of larger firms was significantly higher with 19 per cent, compared to nine per cent in the 2011 survey.

A discussion of the details of the innovation indicators follows below.

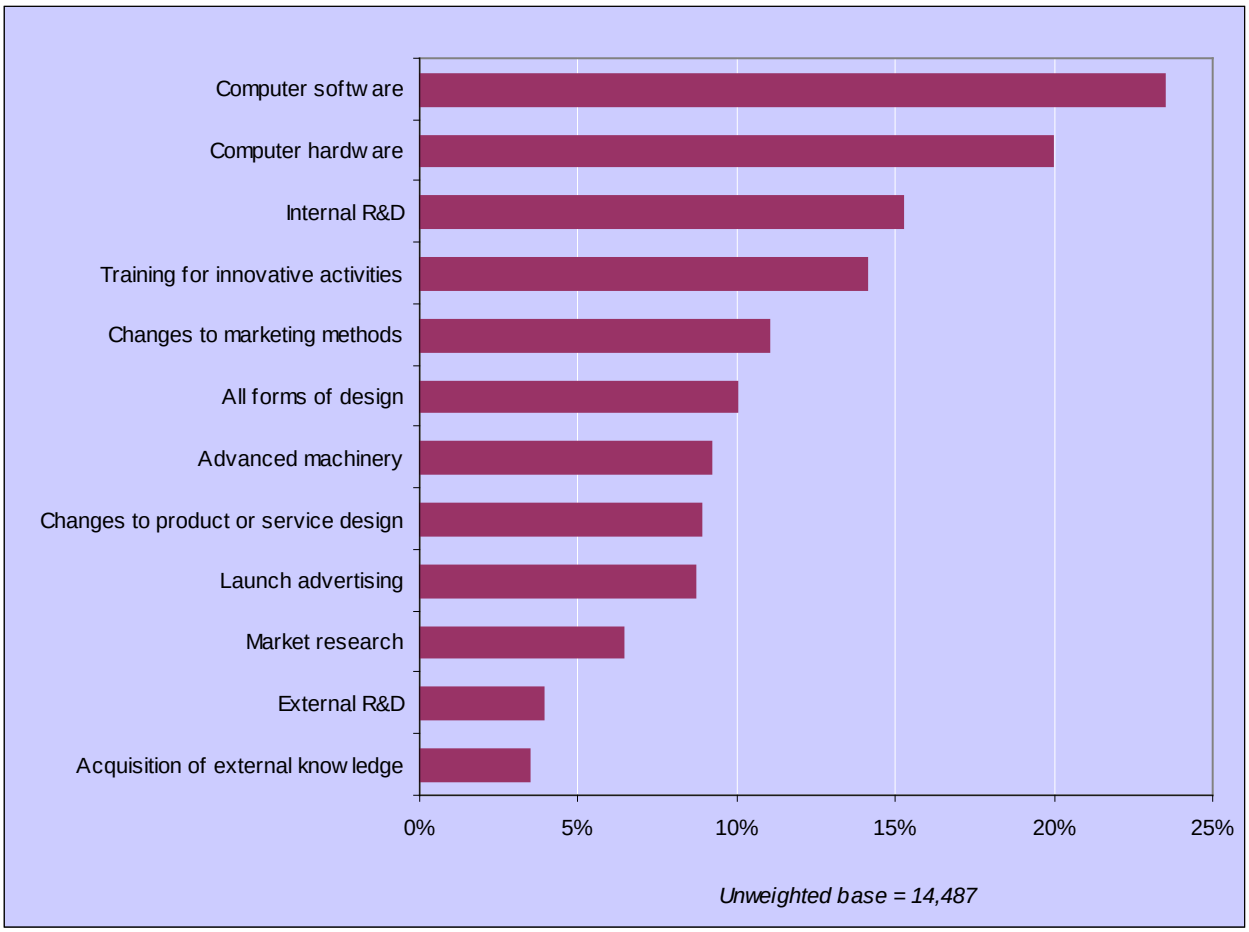
2. Breakdown of innovation activities

As well as having a similar sampling methodology, both the 2011 and 2013 surveys incorporated a mixed mode of questionnaire completion (mainly postal but boosted with telephone interviews). This would mean one can expect a more consistent comparison over the two survey periods.

As shown in Figure 1, the most commonly reported activities were acquisition of computer software and hardware (23 per cent and 20 per cent, respectively) and these proportions went up from 19 per cent of computer software and 16 per cent of hardware in the last survey. The proportions in other categories reported in Figure 1 remained broadly unchanged, except for a slight increase in the category of 'training for innovative activities' which went up from 12 per cent in the 2011 survey to 14 per cent.

[7] The proportions reported following this statement are based on valid responses only. There were high numbers providing 'not applicable' responses that were kept in the base. As a result, 41 per cent and 50 per cent represent 'most' responses.

Figure 1: Innovation activities invested in (all enterprises)



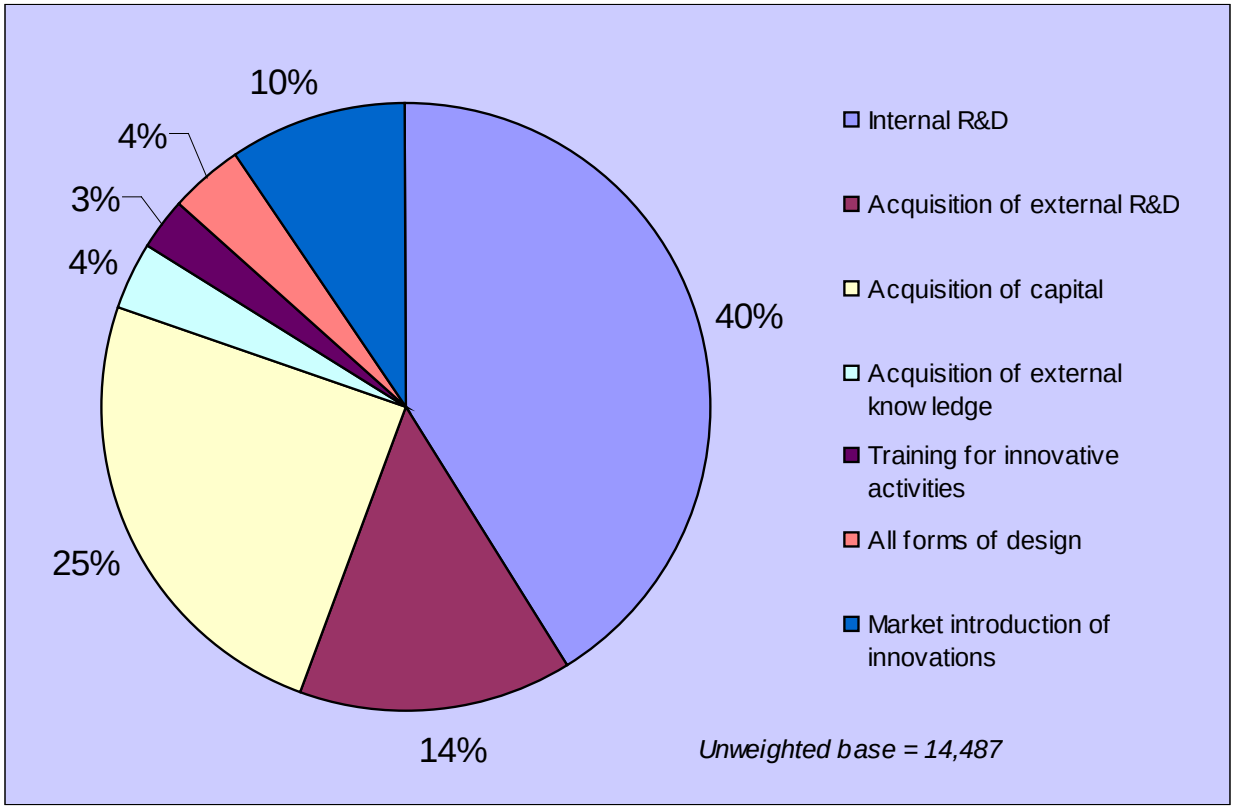
The amounts provided for each of the main innovation-related activities given in Figure 2 had been rather volatile in the survey series. Measures were taken in the 2013 survey to address this issue and to ensure that fluctuations were not due to wording of these questions. The key issue was although the survey questions about businesses' innovation activities referred to a three-year period (1 January 2010 to 31 December 2012), the estimates required for the amount of expenditure were for the year 2012 only. In this survey, the reference year for estimates was marked clearly and the instruction provided emphasised that estimates were asked for '2012 only' in capital letters. The wording of the questions in previous surveys did not make the point about the reference period equally clear.

The results of this survey showed that the overall innovation expenditure provided for the year 2012 was significantly lower than the amount reported in the last survey. It is highly likely that tightening of the instructions for the expenditure question had an impact on amounts provided. This could in fact explain the notable reduction in the estimates for total expenditure.

However, the ranking of the top three highest expenditure categories, given in Figure 2, remained unchanged. The largest share of innovation expenditure belonged to 'internal R&D' (40 per cent, compared to 35 per cent in the 2011 survey), followed by 'acquisition of capital' (i.e., advanced machinery, equipment and software with 25 per cent, compared to 30 per cent in the previous survey) and acquisition of external R&D (with 14 per cent, compared to 24 per cent in the 2011 survey). The category for the 'market introduction of innovations' went up from four per cent in the 2011 survey to ten per cent. There was also an increase in spending for the acquisition of external knowledge category, which went up from only one per cent in 2011 survey to four per cent.

In all, the findings indicate that the total expenditure for 'internal R&D' amounted to around £11.2 billion. This was broadly in line with the most recent Business Enterprise Research and Development Expenditure (BERD) statistics 2012, which reported that businesses' own funds for R&D performed in the UK accounted for £11.3 billion[8].

Figure 2: Innovation expenditure in 2012 (proportion of total expenditure)



[8] http://www.ons.gov.uk/ons/rel/rdit1/bus-ent-res-and-dev/index.html.

3. Non-technological or wider forms of innovation

Innovation is not just about the development or use of technology or other forms of product (goods and services) and process change. There are also non-technological forms of innovation, such as new business practices for organising procedures or changes to marketing concepts and strategies.

An organisational innovation is a new organisational method within an enterprise's business practices (including knowledge management), workplace organisation or external relations that has not been previously used.

Enterprises were asked whether they had made any major changes to their business structure and practices in the three-year period from 2010 to 2012. The organisational innovation questions were revised to match the version found in the CIS harmonised questionnaire. Some of the findings are summarised in Table 2.

Over a third (37 per cent) of businesses engaged in one or more types of non-technological innovation over the latest survey period. Over a fifth (21 per cent) mentioned the implementation of *new business practices* for organising procedures, compared to 16 per cent of businesses in the 2011 survey. As in the 2011 survey, a higher share of large firms (26 per cent) reported this, compared to SMEs (21 per cent). The least frequently reported wider innovation was the implementation of *new methods of organising external relationships*, which was mentioned by only eight per cent of businesses over both survey periods, with SMEs having a lower share than large firms (eight per cent, compared to ten per cent of larger firms).

Table 2: Enterprises that introduced wider forms of innovation*

Per cent

Forms of innovation	Size of enterprise		
	10-250 employees	250+ employees	All (10+ employees)
Wider Innovator	37	39	37
New business practices	21	26	21
New method of organising work responsibilities	17	21	18
New method of organising external relationships	8	10	8
Changes to marketing concepts or strategies	16	16	16

** = Unweighted base = 14,487*

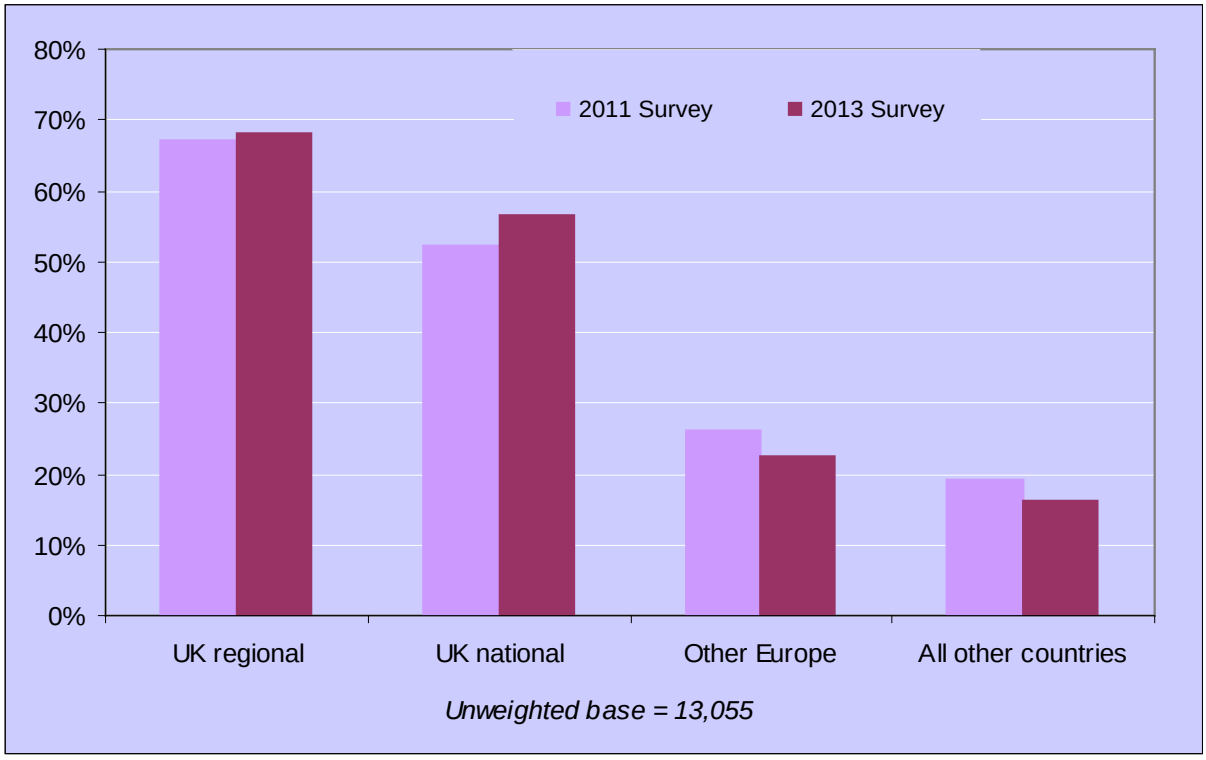
The proportions of businesses that reported the implementation of *new methods of organising work responsibilities* and *changes to marketing concepts or strategies* remained the same with 18 and 16 per cent, respectively. There was no difference in the take up of changes to marketing concepts or strategies between SMEs and large firms.

4. Markets and exports

4.1 Geographical markets

The businesses surveyed were asked which geographical markets they had operated in. As Figure 3 shows, the regional markets were still the most dominant market for UK enterprises; 68 per cent of firms reported operating in regional markets, compared to 67 per cent in the 2011 survey. Almost six in ten (57 per cent) operated at national level, showing an increase from 52 per cent in the last survey. However, the proportions of businesses operating in European countries and all other countries showed a decline, with 23 per cent reporting to operate in European markets (compared to 26 per cent in the last survey period), whilst 16 per cent were operating in world-wide markets (compared to 19 per cent in the previous survey).

Figure 3. Geographical markets (valid responses only)



4.2 Largest market in terms of turnover

A new question was added which asked businesses what their 'largest market' was in terms of turnover. In all, 90 per cent answered the question about the geographical markets. Of these valid responses, only 64 per cent went on to provide estimates. Over half (57 per cent) reported that their largest markets were 'UK regional' (within approximately 100 miles of their business). Over a third (35 per cent) mentioned 'UK national'. European countries and overseas were cited by only three and five per cent, respectively.

4.3 Exports

Only 16 per cent of businesses provided an estimate of exports for the year 2012. This compares to 19 per cent in the 2011 survey. Looking back at the survey series, proportions reporting estimates of exports have been steadily decreasing: 30 per cent of respondents gave an estimate in the 2005 survey. However, the trends indicate that the majority of exporters engaged in some form of innovation behaviour.

Context for innovation

The survey asked questions about various aspects of the context relevant to business innovation behaviour. The following sections include statistics that refer to any businesses that had engaged in any of the four types of innovation behaviour described previously[9].

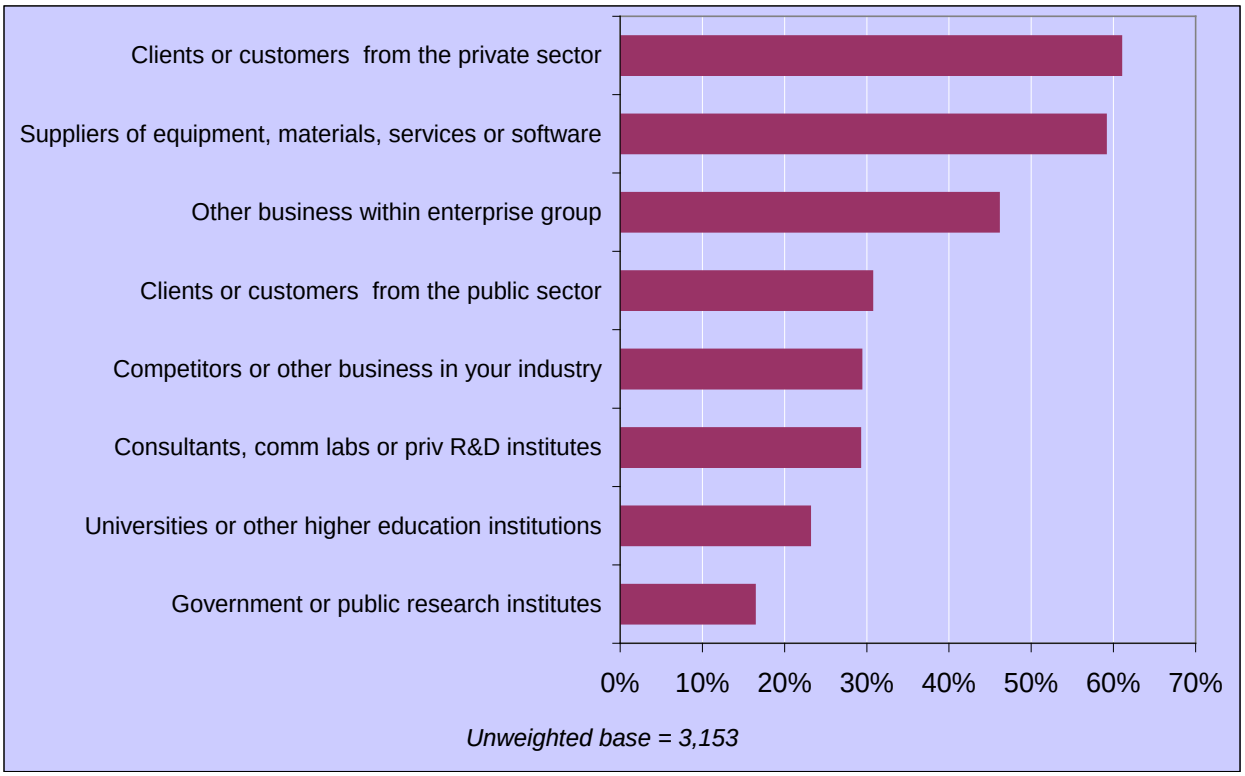
5. Co-operation arrangements

Over 40 per cent of all broader innovating enterprises (41 per cent, compared to 47 per cent in the last survey) reported having co-operation arrangements on some innovation activities. Over two thirds of the collaborations (67 per cent) were reported to be agreements operating at a national level. This proportion remained broadly the same which was 68 per cent in the last survey.

As shown in Figure 4, the most frequently mentioned partners of businesses with co-operation agreements were clients or customers from the *private sector* (61 per cent). There was also a sizable proportion (31 per cent) of businesses that cited clients or customers from the *public sector*. The 2011 survey also reported that the most frequently mentioned partners for co-operation were 'clients or customers' (73 per cent). However, this category included *both* private and public sectors clients/customers and therefore cannot be directly comparable in terms of change over time for this particular response category. However, other response categories presented in Figure 4 showed similar proportions for the co-operation partners over the two survey periods.

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

Figure 4: Co-operation partners (broader innovating businesses, collaborative firms only)



A new question was added that asked businesses which type of co-operation partner they had found most valuable for their business innovation activities. Almost two thirds (63 per cent) did not provide a valid response for this question. Clients or customers from the private sector were seen as the most valuable partners for co-operation, which accounted for 11 per cent of broader innovators with co-operation arrangements (two per cent mentioned clients or customers from public sector). One in ten cited suppliers of equipment, materials, services or software, whilst eight per cent reported other businesses within their enterprise group as the most valuable co-operation partner.

6. Sources of information

Table 3 provides the details of the extent to which businesses use external resources in their innovation activities. It is important to know how far enterprises engage with external sources and the relative importance of technology and other innovation-related knowledge and information. Innovation is increasingly complex, requiring the co-ordination of multiple inputs. Firms can gain guidance, advice or even inspiration for their prospective innovation projects from a variety of both public and private sources.

Businesses were asked to rank information sources on a scale from “no relationship” to “high importance”. The sources presented were:

- **internal**: from within the enterprise itself or other enterprises within the enterprise group;
- **market**: from suppliers, customers, clients, consultants, competitors, commercial laboratories or research and development enterprises;

- **institutional**: from the public sector such as government research organisations and universities or private research institutes; and

- **other sources**: from conferences, trade fairs and exhibitions; scientific journals, trade/technical publications; professional and industry associations; technical industry or service standards

The findings from businesses' rating of these sources are given in Table 3.

The ranking of information sources has been fairly consistent throughout the history of the survey. Overall, market sources such as clients and customers and internal sources (within their enterprise group) were rated as the most important source of information for innovation. Again, the least frequently cited sources were institutional sources. The most notable decrease in firms' rating for sources of information was in the category of 'scientific journals and trade/technical publications', which was down from eight per cent to three per cent. The proportion was the same among large and small firms. The 2011 survey showed that this source was much more popular among large firms (15 per cent, compared to eight per cent of SMEs).

Table 3: Sources of information (% of all firms with some innovation activity rating "high")*

Per cent

	Size of enterprise		
Information sources	10-250 employees	250+ employees	All (10+ employees)
Internal			
Within your enterprise group	50	59	51
Market			
Suppliers of equipment	20	24	20
Clients or customers from private sector	24	31	24
Clients or customers from public sector	11	14	11
Competitors or other enterprises in your industry	11	17	11
Consultants, commercial labs or private R&D institutes	8	10	8
Institutional			
Universities or other higher education institutes	2	3	2
Government or public research institutes	2	4	2
Other sources			
Technical, industry or service standards	9	13	9
Conferences, trade fairs, exhibitions	6	5	6
Scientific journals and trade/technical publications	3	3	3
Professional and industry associations	6	8	6

** = Unweighted base = 6,992*

6.1 Public sector procurement and innovation

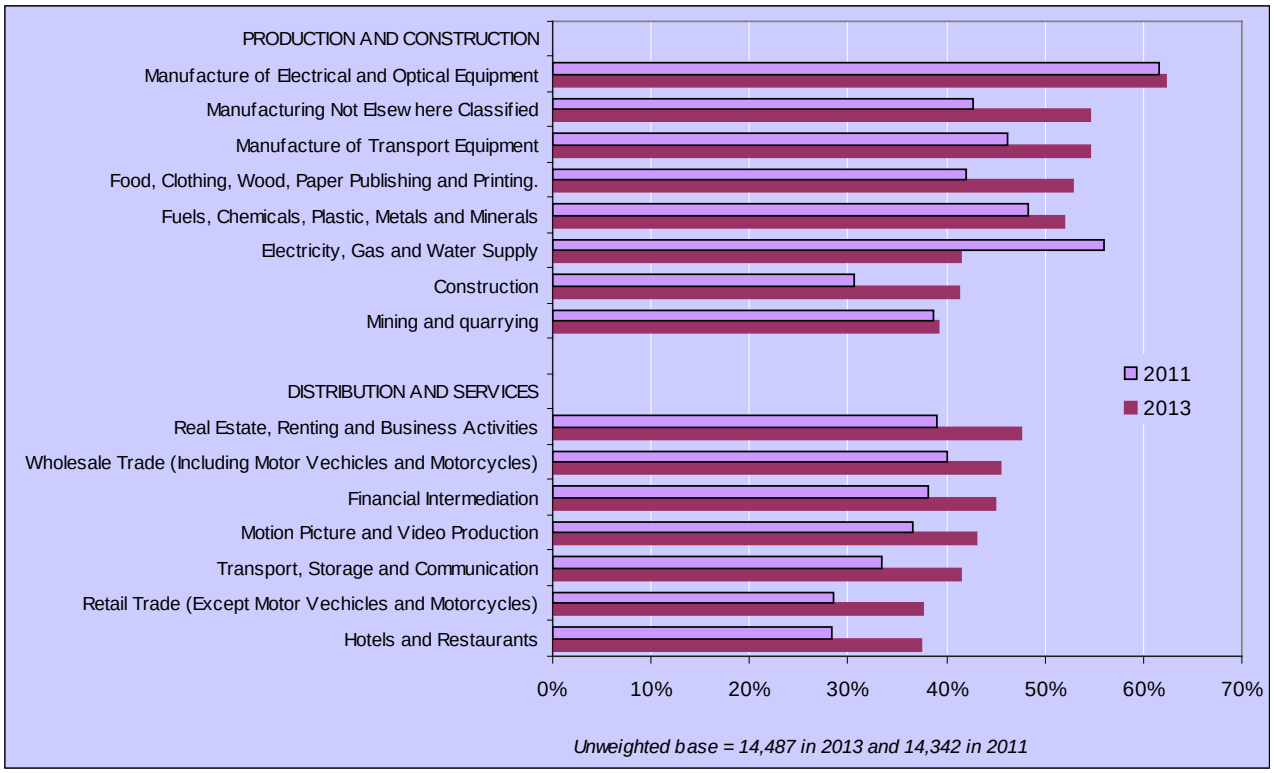
A new question was added which asked firms whether they had any procurement contracts to provide goods or services for 'domestic public sector organisations' or 'overseas/non-domestic public sector organisations'. Around 15 per cent of respondents reported having procurement contracts to provide good or services for domestic public sector organisations. This compared to four per cent having similar contracts to supply overseas/non-domestic public sector organisations.

7. Innovation in sectors

The numbers of the 'innovation active' businesses across all industrial and commercial sectors are charted in Figure 5. As pointed out before, a more direct comparison with the 2011 survey results is possible because of having the same sectoral reclassification and a more consistent methodology between the two surveys.

As can be seen in Figure 5, the production sector, particularly manufacturing industry was the most innovation active: 62 per cent of 'manufacture of electrical and optical equipment' were innovation active. This was broadly the same in the 2011 survey. Electricity, gas and water supply was the only industry within the production sector that showed a decline since the last survey. All other industries showed significant increases. The construction sector also showed an increase, going up from 31 per cent in the 2011 survey to 42 per cent.

Figure 5 - Innovation active businesses by industry over two survey periods (% of all enterprises)



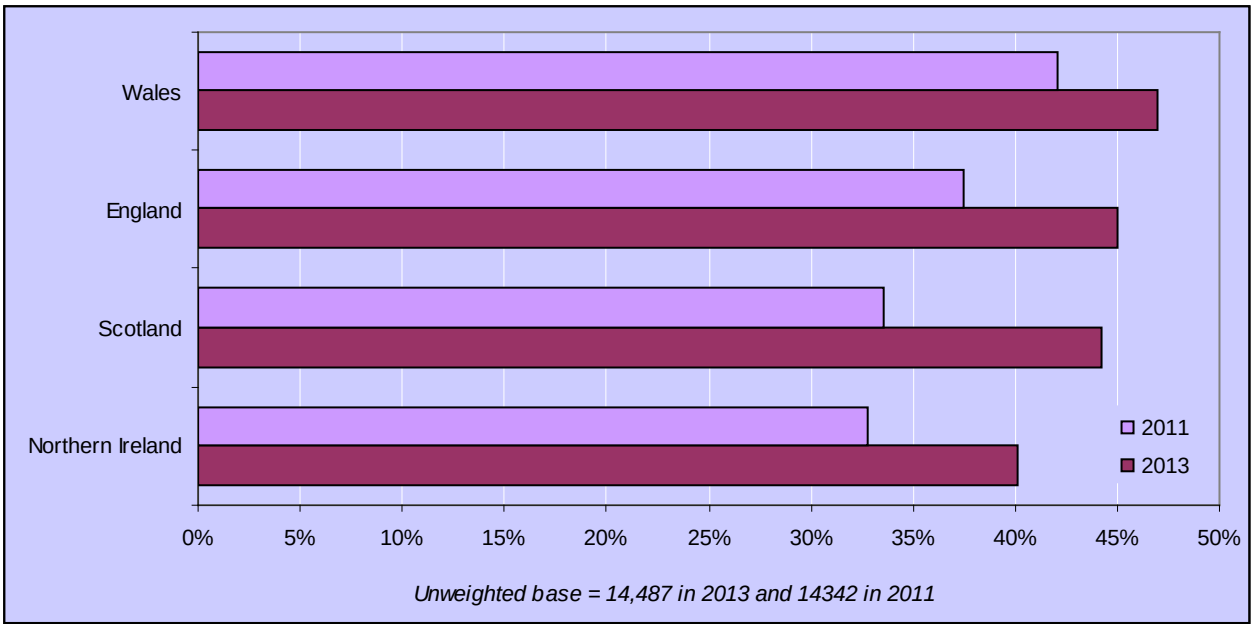
The industries within the distribution and services sectors also showed significant increases. The top three industries with the highest shares were: real estate, renting and business activities (48 per cent), wholesale trade (46 per cent) and financial intermediation (45 per cent). These three industries also had the highest shares in the 2011 survey.

8. Geography of innovation

8.1 Country level differences

Figure 6 presents the shares of innovation active businesses across the countries and shows a comparison with the 2011 data based on the innovation active definition. There were seven percentage points between the least and most 'innovation active' country, with Wales having the highest share (47 per cent) and Northern Ireland lowest (40 per cent). The same pattern was also found in the 2011 data in terms of highest and lowest shares. However, the shares for all four countries were notably higher in this survey.

Figure 6. Shares of innovation active businesses by country (all enterprises)



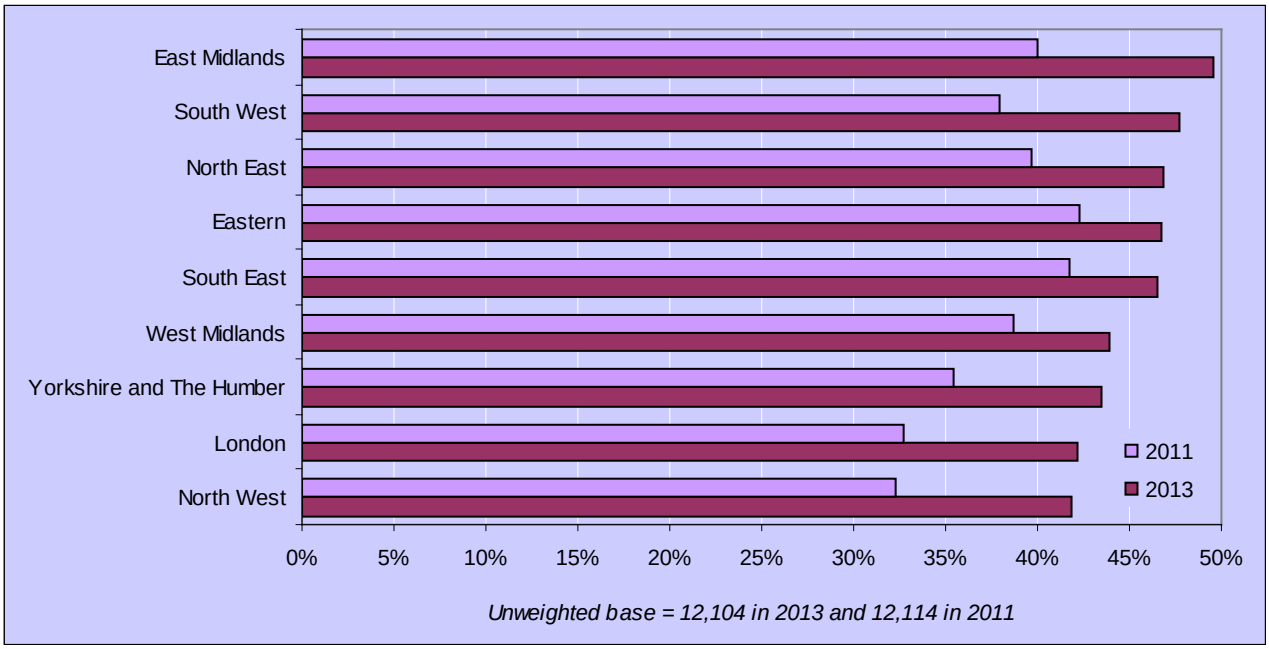
8.2 Regional level differences

Figure 7 shows the shares of innovation active businesses across the regions of the UK, again compared with the 2011 data.

There were eight percentage points between the least and most 'innovation active' region. Although the East Midlands region had the highest proportion with almost 50 per cent, this was closely followed by South East (48 per cent), Eastern (47 per cent), North East (47 per cent) and South West (47 per cent). The North West and London regions had 42 per cent which were the lowest shares. However, the share of all regions went up notably

since the 2011 survey with increases of five to ten percentage points between this survey and the last one.

Figure 7. Shares of innovation active businesses by region (all enterprises)



9. Factors driving innovation

Businesses defined as ‘broader innovators’ were asked to rank a variety of drivers for innovating on a scale from no impact to low, medium or high impact. Table 4 gives the proportion of businesses that had rated ‘high’ in each of the innovation factors presented to them. Quality enhancement was again the most motivating factor, rated high by over a third (36 per cent) of businesses described as broader innovator.

There was a significant increase in the numbers citing ‘replacing outdated products or processes’ which was the second most frequently mentioned factor driving innovation (rated ‘high’ by 31 per cent). This factor was reported ‘high’ by 17 per cent in the 2011 survey. As in the previous survey, there was a notable difference between the factors motivating large firms and SMEs. For example, ‘reducing costs per unit produced or provided’ was higher in the agenda for SMEs whilst ‘entering new markets’ seemed to be higher for large enterprises. In both 2011 and 2013, ‘reducing environmental impact’ and ‘improving health and safety’ were the least highly rated innovation factor overall. Yet these were still rated ‘high’ by a fifth (19 per cent) of large businesses.

Table 4: Innovation factors (% of all broader innovators rating "high")*

Per cent

	Size of enterprise		
Innovation factors	10-250 employees	250+ employees	All (10+ employees)
Improving quality of goods or services	35	43	36
Replacing outdated products or processes	31	31	31
Increasing market share	28	39	29
Increase range of goods or services	28	31	28
Increasing value added	21	31	21
Entering new markets	21	23	21
Meeting regulatory requirements (including standards)	20	29	20
Reducing costs per unit produced or provided	18	28	18
Improving capacity for producing goods or services	16	20	17
Improving flexibility for producing goods or services	16	20	16
Improving health and safety	13	20	13
Reducing environmental impact	10	19	10

** = Unweighted base = 6,992*

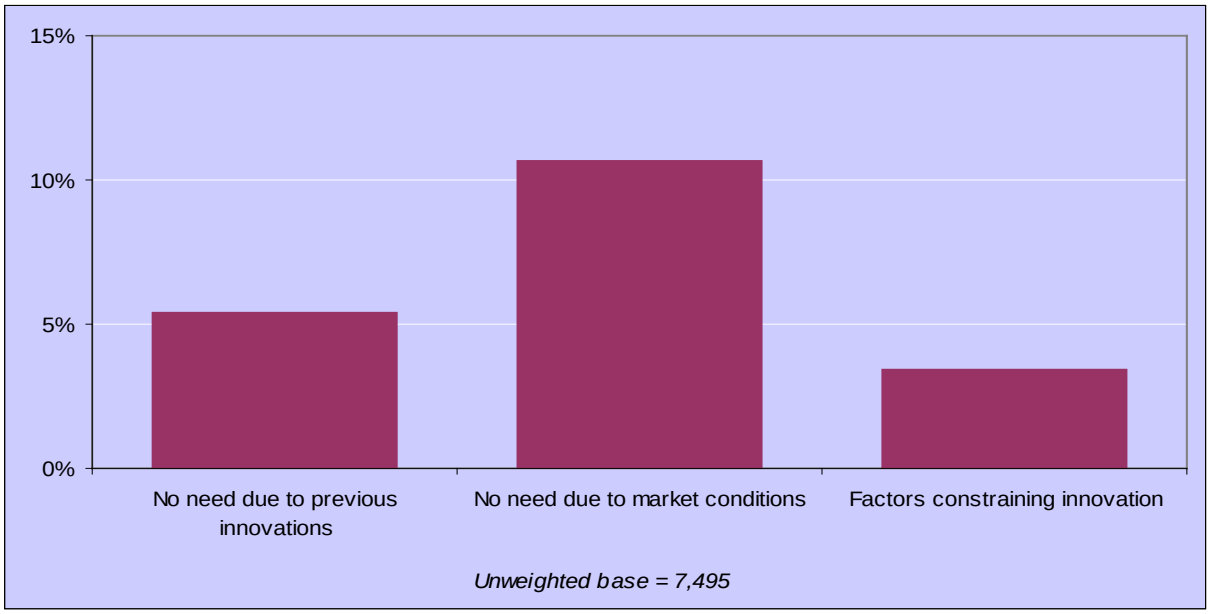
10. Non-innovators

Businesses that reported having no innovation activity during the survey period were asked to indicate why it had not been necessary or possible to innovate. They were offered the response categories presented in Figure 8[10], alongside a response category saying 'none of those apply'.

Over two thirds (68 per cent) said none applied in their case. Over a tenth (11 per cent) said 'no need due to market conditions' which was the most frequently cited reason. Around five per cent mentioned 'no need due to previous innovations' and a few (three per cent) cited 'factors constraining innovation'. As well as having much lower proportions citing these reasons as compared to the last survey, the pattern of response also differed from the 2011 survey. The most frequently cited reason in the 2011 data was 'factors constraining innovation' (31 per cent) which represented the least frequently reason in this survey.

[10] The 2011survey included a question asking businesses to rate how important certain factors, such as costs, knowledge and market factors, were in constraining innovation activities. This question was not included in the 2013 survey and therefore, it is not possible to explore further what factors would be rated high as barriers to innovation.

Figure 8 - Reasons why enterprises did not innovate 2010-2012 (non-innovative enterprises only)



11. Effectiveness of methods used to protect the value of innovations

Successful innovations often generate intellectual property that businesses will try to protect. This can be done in numerous ways depending upon the knowledge generated and the business and market context. In this survey, the question for this aspect was about asking businesses how effective they had found each of the methods given in Table 5 for maintaining or increasing the competitiveness of product or process innovations introduced during 2010 to 2012.

As it can be seen in Table 5, the proportions reported were low. However, earlier surveys showed that all these methods had been made little use of in practice, which would indicate that these low proportions were to be expected. The two most effective methods to maintain competitiveness were keeping goods or services as complex as possible (six per cent) and having a lead time advantage (five per cent). There was a size effect of businesses for keeping products complex. Higher proportion of large firms rated ‘complexity of goods or services’ (eight per cent), compared to six per cent of SMEs. Similarly, compared to SMEs, higher number of large firms also gave more weight to trademarks and patents.

Table 5: Firms reporting effectiveness of methods used to protect value of their innovation as 'high'*

Per cent

	Size of enterprise		
Methods for competitiveness	10-250 employees	250+ employees	All (10+ employees)
Patents	2	4	2
Design registration	1	3	1
Copyright	2	3	2
Trademarks	2	5	3
Lead time advantages	5	6	5
Complexity of goods or services	6	8	6
Secrecy (include non-disclosure agreements)	3	5	3

** = Unweighted base = 14,487*

12. Skills for innovation

The skills question, apart from the standard question on the proportion of employees holding a degree or above, was first asked in 2011 survey. This was the second time it was included. It asks businesses about whether they had employed or brought in certain skills over the survey period.

Table 6: Average proportion (%) of 2012 employees who hold a degree or higher*

Per cent

	Size of enterprise		
	10-250 employees	250+ employees	All (10+ employees)
All			
Science or engineering subjects	10	9	10
Other subjects	13	13	13
Broader innovators			
Science or engineering subjects	12	10	12
Other subjects	14	13	14
Non- innovators			
Science or engineering subjects	4	7	4
Other subjects	11	13	11

** = Unweighted base = 14,487*

Table 6 presents the results from the standard question and gives the average proportion of employees who hold a degree or higher. Comparisons with the 2011 results showed that the average proportions increased for both 'science or engineering' subjects (went up from seven per cent in the previous survey to 10 per cent) and other subjects (went up from nine per cent in 2011 to 13 per cent). For broader innovators, the increases were across the board. However, for non-innovators, the increases were much higher for 'other' subjects than for 'science or engineering'.

The results from the questions that were recently added are in Tables 7 and 8. Table 7 sets out the results for a range of skills asked about in the survey. These skills can relate either to employees or skills brought in. As can be seen, large firms were more likely to use each of the listed skills than SMEs.

Table 7: Share (%) of individuals employed in-house or bought in from external sources with listed skills by firm size*

Per cent

	Size of enterprise		
Listed skills for employees in-house or brought in	10-250	250+ employees	All (10+ employees)
Graphic artists/ layout/ advertising	27	44	27
Design of objects or services	18	29	18
Multimedia/ web design	27	44	28
Software development/ database management	23	51	24
Engineering/ applied sciences	14	29	15
Mathematics/ statistics	9	24	10

** = Unweighted base = 14,487*

Table 8 compares 2011 and 2013 surveys for all respondents. It also presents the differences between the shares of broader innovators and non-innovators for employing the same listed skills as in Table 7. Again, these could be either in-house or brought in from external sources.

As can be seen in Table 8, there were notable increases in employment of all six of the listed skills. The increase was highest for the 'graphic artists/advertising' category which went up from 15 per cent in the 2011 survey to 27 per cent. The skills category of 'mathematics/statistics' showed an increase of five percentage points, up from five to ten per cent. Non-innovators increased their shares in all six skills categories whilst the shares for broader innovators remained broadly the same

Table 8: Share (%) of 'broader innovators' and non-innovators across 2011 and 2013 surveys

Per cent

	All*		**Broader innovators****		**Non-innovators+**	
	2011	**2013**	**2011**	**2013**	**2011**	**2013**
Graphic artists/ layout/ advertising	15	27	31	32	5	15
Design of objects or services	9	18	21	22	2	8
Multimedia/ web design	17	28	34	34	5	14
Software development/ database management	14	24	31	29	4	11
Engineering/ applied sciences	8	15	18	18	2	7
Mathematics/ statistics	5	10	11	11	2	6

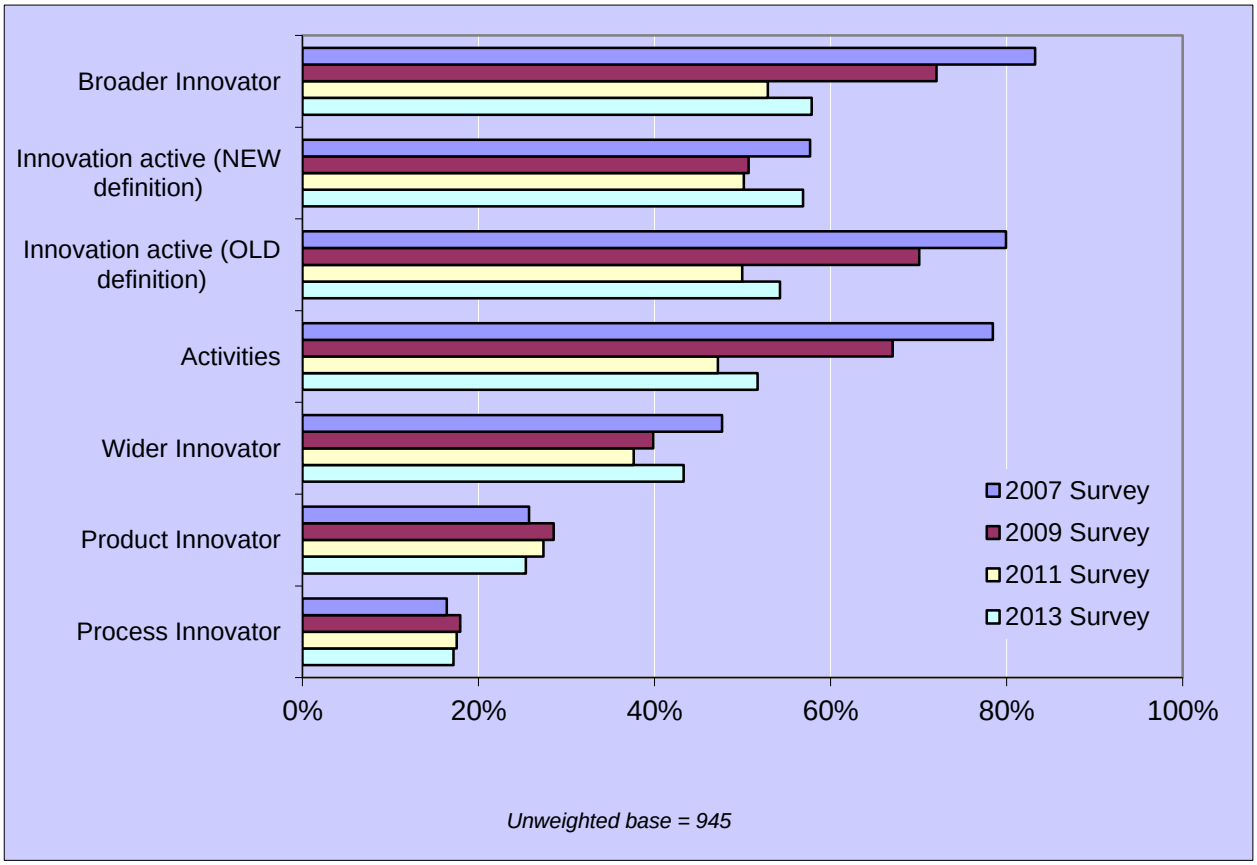
** = Unweighted base for All is 14,487 for 2013; 14,342 for 2011. **= Unweighted base for broader innovators is 6,992 in 2013; 5,744 in 2011; + = Unweighted base for non-innovators is 7,495 in 201; 8,598 in 2011.*

13. Comparisons with the 2011, 2009 and 2007 UKIS Panel data

The availability of panel data (businesses responding to the 2013, 2011, 2009 and 2007 surveys) enables some comparison of businesses' innovation activities over time. Of the 945 businesses in the four survey panel, around two thirds (66 per cent) were large enterprises. Of the remaining 34 per cent, most of them were businesses with 50 to 249 employees (31 per cent), with only three per cent coming from firms with 10 to 49 employees.

Figure 9 presents the innovative characteristics of the panel data. A comparison with Table 1 shows that the 2013 panel data results differ from the general survey results. As compared to businesses in the general survey, the firms in the panel data were notably more innovative across all innovation indicators. The same was also true for the comparison of the 2011 panel data results with the 2011 general survey data.

Figure 9: Key innovation indicators of the UKIS Panel data 2007, 2009, 2011 and 2013

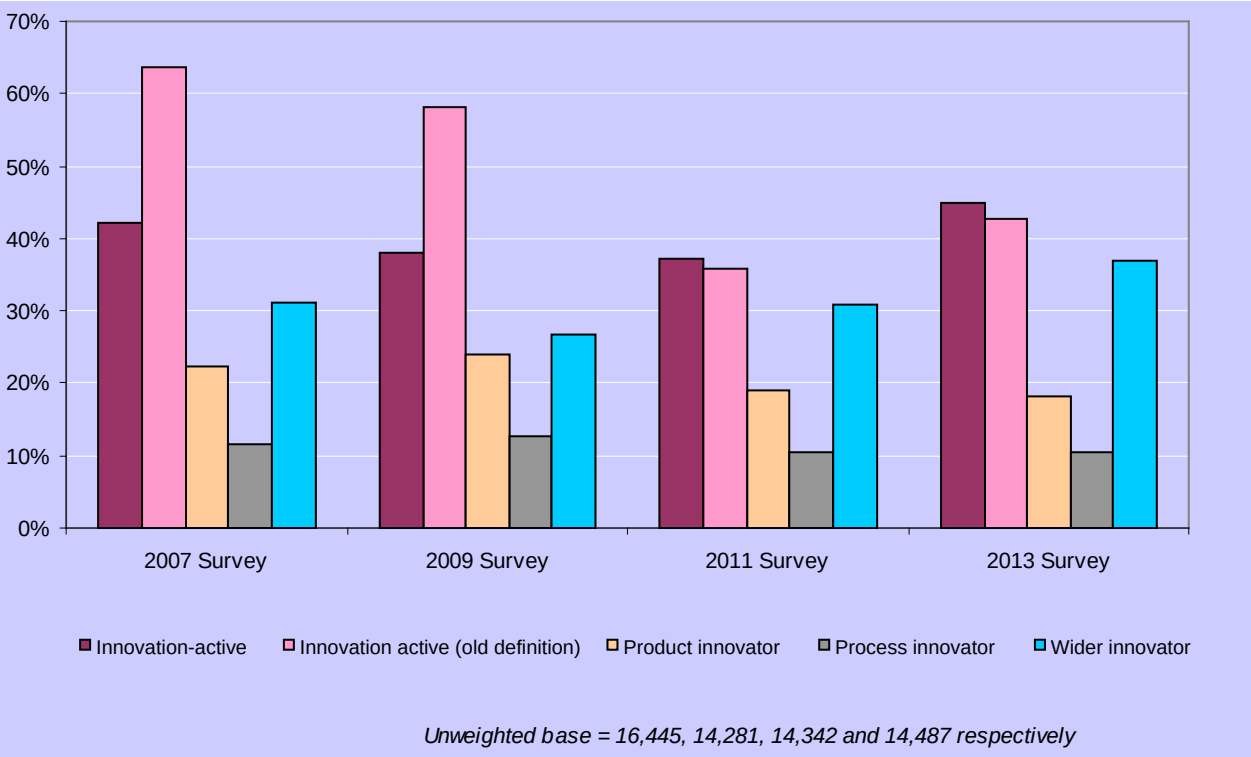


14. Comparisons with the 2007, 2009 and 2011 UKIS cross-section data

As in the 2011 survey, the 2013 survey used a sampling format based on SIC 2007, which is an EU legislative requirement regarding the collection of innovation statistics. Similarly, the sample selection was conducted by ONS and it followed the same sampling methodology as the 2011 survey. Furthermore, the definition used for 'innovation active' was the same across the last two surveys. As a result, one would expect to see that the data in this survey are much more comparable to the data in the 2011 survey.

Figure 10 presents a general comparison of the results for the key innovation indicators for the four surveys, this time using the cross-section data. The chart shows similar trends for the 2011 and 2013 data, with the notable increases on the shares of innovation active and broader innovators.

Figure 10: UKIS – cross section data 2007, 2009, 2011 and 2013



15. Conclusions and next steps

This first findings report presents some top-line results of the latest Innovation Survey and provides information on some dimensions of the changes in innovation behaviour in the UK relative to the 2011 survey. The report also provides some comparisons with earlier surveys making use of both panel and cross-section data.

The UK Innovation Survey represents a major source of data for the research community. The data feeds into the economic analyses and other policy related work. It provides both a periodic snapshot of innovation behaviour and has the additional benefit of the panel dataset which facilitates longitudinal studies and evaluations of innovation policy. The data is also comparable with other countries, which provides useful international benchmarking for the UK performance in this area.

The Department for Innovation Business and Skills will publish more extensive, detailed survey results in the form of a Statistical Annex of the UKIS 2013 data later in the year.

As with previous surveys, it is expected that there would be a substantial body of further research using the survey results and publications in various forms over the next few years. Data will be available for researchers in the Virtual Micro-Data Laboratory (VML) and from the Secure Data Service (SDS).[11]

[11] Details on how to access the VML and SDS can be found here: http://www.ons.gov.uk/ons/about-ons/business-transparency/freedom-of-information/what-can-i-request/virtual-microdata-laboratory--vml-/index.html and http://www.data-archive.ac.uk/home

ANNEX – Methodology

The UK Innovation Survey is funded by the Department of Business, Innovation and Skills (BIS). The survey was conducted on behalf of the BIS by the Office for National Statistics (ONS).

The UK Innovation Survey is part of a wider Community Innovation Survey (CIS) covering EU countries. The survey is based on a core questionnaire developed by the European Commission (Eurostat) and Member States. This is the eight iteration of the survey (CIS8). CIS7, covering the period 2008 to 2010, was carried out in 2011 and the results form part of various EU benchmarking exercises for international comparisons.

The UK Innovation Survey 2013 sampled over 28 thousand UK enterprises. The survey was voluntary and conducted by means of both a postal questionnaire and telephone interview for businesses that had not yet completed a postal response.

Coverage and Sampling

The survey covered enterprises with 10 or more employees in sections C-K of the Standard Industrial Classification (SIC) 2007. This was the second time survey data was collected using a sample based on the Standard Industrial Classification 2007 (SIC 2007).

The sample was drawn from the ONS Inter-Departmental Business Register (IDBR) in January 2013.

Response and weighting

The questionnaires for the survey were dispatched between 25 and 27 February 2013.

Valid responses were received from 14, 487 enterprises which gives a response rate of 51 per cent.

The results in this report are based on weighted data in order to be representative of the population of firms. The responses were weighted back to the total business population of those in the IDBR. On average each respondent represents 12 enterprises in the population.

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