

BIS | Department for Business
Innovation & Skills

**FIRST FINDINGS FROM THE UK
INNOVATION SURVEY 2011
(REVISED)**

Science and Innovation Analysis

MAY 2013

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First findings from the UK Innovation Survey 2011 (revised¹)

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Summary

This article presents the initial analysis of the 2011 UK innovation survey (UK IS 2011). This is the first survey data collected using a sample based on the Standard Industrial Classification 2007 (SIC 2007). This creates a break in the times series. The survey is postal but, unusually, around half of the survey responses were collected by telephone interview.

Beginning by examining the impact of SIC 2007 and changes to the data collection methodology we then discuss the key innovation statistics; we then examine in which markets and regions innovative UK businesses are operating; discuss collaborations and sources of information, factors driving and barriers to innovation and the uptake of intellectual property by firms to protect the value of innovations. We then present results to the new question on the skills businesses have relied upon over the period. The article includes a few highlights from analysis of the panel (overlap) between the 2009, survey and its predecessors from 2007 and 2005 and concludes with a comparison of the last three surveys from 2009, 2007 and 2005.

Introduction

This article presents the first findings from the UK Innovation Survey 2011, covering the three-year period from 2008 to 2010. This is the UK contribution

¹ The figures quoted in this publication have been revised from those in the First Findings paper released in May 2012. The weights used are more refined and further validation/ amendments have been incorporated. This affected the derived variable for innovation active, based on the new definition.

to a Europe-wide Community Innovation Survey (CIS). The 2011 survey is the third survey run on the biennial cycle.

The 2011 survey used a new sampling format based on SIC 2007. This was an inevitable change and an EU legislative requirement on the collection of innovation statistics. The sample selection was conducted by ONS for the first time and, in addition to the move to SIC 2007, also included two other significant changes. Firstly, the sample was based on 4, rather than 3, size classes by splitting medium size firms into 2 classes of 50 – 99 and 100 – 249. Secondly, to minimise respondents' burden, the sample base was refreshed (or rotated) bringing new firms into the selection from which to draw the survey. With a large proportion of businesses receiving the survey for the first time, we have also noticed a higher item non-response on this occasion. (Note: Around half of responses in UKIS 2009 were common to the previous survey in 2007 against less than a fifth common to UKIS2011 and the previous survey in 2009.) Whereas previous surveys were showing respondents were 'learning' how to complete the form and demonstrating a good understanding of the questions and what was meant by innovation. In this respect, the latest data is more comparable to data from the CIS3 survey conducted in 2001, where respondents were also new to the survey.

The questionnaire was again sent to 28 thousand UK enterprises with 10 or more employees across manufacturing and services sectors and achieved a 50 per cent response rate. Due to an unexpected poor survey return, telephone response chasing commenced earlier and over 7 thousand responses were collected by telephone interview (nearly a half of the achieved sample). The combined effect of businesses new to the survey and a telephone survey, as opposed to a postal response, is difficult to quantify. However, a catalogue of changes to the sampling and collection methodology have had a definite impact on the data with item response, in particular, adversely affected. Any comparisons made with previous surveys within this paper are to give a feel for general changes to behaviour over the survey period only.

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

There has still been some preservation of the panel (respondents also common to the 2009, 2007 and 2005 surveys) though significantly reduced to around 9 hundred businesses. Nevertheless, it remains a valuable resource for both government and academic users alike.

In December 2011, the Department published its 'Innovation and Research Strategy for Growth'. The data from the UK innovation survey feeds into these 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 also facilitates longitudinal studies and evaluations of innovation policy. The data is also comparable with other countries.

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

Two noteworthy changes to the survey in 2011 were the re-introduction of a question on Exports (last included 4 years ago in UKIS 2007) and an additional question on types of skills businesses employed or purchased externally.

The composition of the 2011 achieved sample comprises fewer large firms (21 %) than the last survey (25%). In fact the response rate for large businesses was only 50 per cent against 75 per cent responses in 2009. This was unexpected given an increase in the number of large firms receiving the survey due to sector re classification in 2011.

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, 2008 to 2010² and makes some very general comparisons with the results obtained from the previous survey conducted in 2009³.

Innovation activity⁴ is defined here as where enterprises were engaged in any of the following:

² All results are grossed up to the business population, and all figures quoted relate to UK Innovation Survey 2011 unless stated otherwise.

³ General comparisons refer to overall survey results. Other differences between the survey, such as the changes to SIC (2007), sectoral coverage and variations in question wording and the overlap of the reference period (2008 and 2008 and 2006 for the time series comparison) in question, are not accounted for.

⁴ The UK definition used follows that 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.

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 activities⁵;

For the purpose of the UK innovation survey and inline with the European-wide Community innovation survey a business that has engaged in any of the activities 1 to 3 is defined **innovation active**.

Table 1: Enterprises engaging in innovation activity, by size and type of activity, 2008-2010

| Type of activity | Per cent | | |
|--|--------------------|----------------|-----|
| | Size of enterprise | | All |
| | 10-250 employees | 250+ employees | |
| 2011 | | | |
| Innovation active (revised) | 37 | 42 | 37 |
| <i>Innovation active (old definition)</i> | 36 | 41 | 36 |
| Broader innovator | 39 | 44 | 39 |
| Wider innovator | 31 | 35 | 31 |
| Activities | 33 | 38 | 33 |
| Product innovator | 19 | 23 | 19 |
| <i>of which (share with new-to-market products)</i> | 46 | 50 | 46 |
| Process innovator | 10 | 17 | 10 |
| <i>of which (share with new-to-industry processes)</i> | 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 |
| 2009 | | | |
| Innovation active | 38 | 49 | 38 |
| <i>Innovation active (old definition)</i> | 58 | 60 | 58 |
| Broader innovator | 60 | 64 | 61 |
| Wider innovator | 26 | 38 | 27 |
| Activities | 55 | 55 | 55 |
| Product innovator | 24 | 30 | 24 |
| <i>of which (share with new-to-market products)</i> | 45 | 43 | 45 |
| Process innovator | 12 | 18 | 13 |
| <i>of which (share with new-to-industry processes)</i> | 29 | 30 | 29 |
| Abandoned activities | 4 | 6 | 4 |
| On-going activities | 6 | 9 | 6 |
| Both product AND process innovator | | | |
| Either product OR process innovator | 9 | 14 | 9 |
| | 27 | 35 | 28 |

⁵ 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). This differs from previous survey routing.

For the purpose of this paper a business that has engaged in any of the activities 1 to 4 is defined as a **broader innovator**. We define a **wider innovator** as a business that has engaged in activity 3.

Before we look closely at the results from Table 1, it is worth noting that GDP growth began to turn negative in the 2nd quarter of 2008, so economic conditions were fluid and probably unfavourable throughout the reference period 2008-2010. This is likely to have had an impact on the number of businesses starting innovation activities in 2008 thereby affecting the overall number of innovation active (defined above) firms. In fact, 37 per cent of enterprises were classed as being innovation active during this period. Making a direct comparison with the results from 2009 is not possible due to the changes to the organisational question, but it seems safe to say the number of innovation active firms over the period remained broadly unchanged. The only indicator to increase was the number of firms engaging in wider (non-technological innovations), but again the data is not directly comparable for reasons given above. However, it is plausible businesses would be reorganising in an attempt to survive in these unfavourable economic conditions.

Product and process innovations both fell. Despite the fall, just under a half of product innovations were novel or new to the market. A quarter of process innovations were novel or leading edge.

In general, the shares of large firms engaging in all types of innovation activities were higher than small and medium sized firms (SMEs).

Respondents tell us the majority of goods and service innovations are developed within the business (41 per cent and 49 per cent respectively). Around a fifth of service innovations are also developed by the business with other businesses or organisations (slightly less than goods innovations at 16 per cent) with just under a tenth of goods and services developed by other organisations (both 9 per cent).

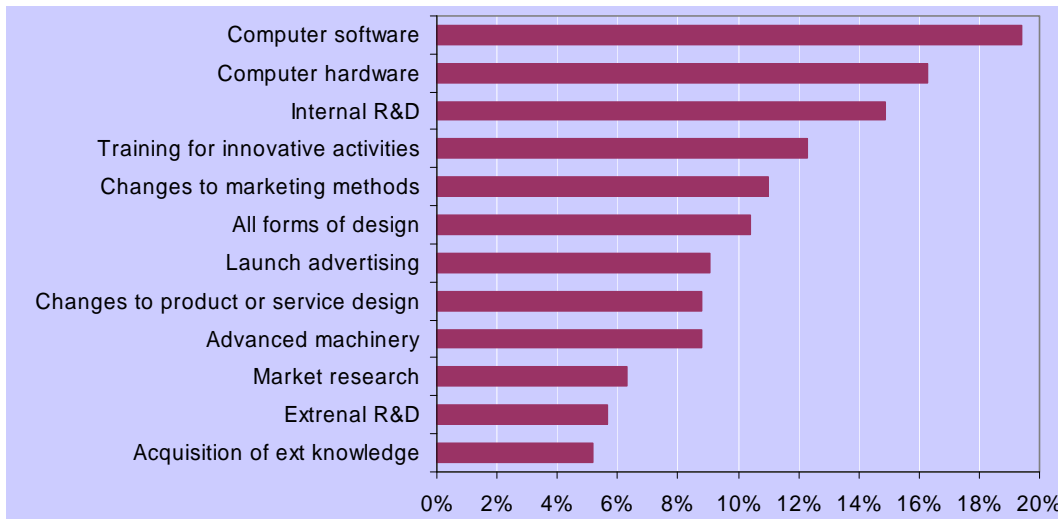
The proportions of ongoing and abandoned innovation projects were similar to the last period. A discussion of the other innovation indicators follows below.

Innovation activities

There is as much as a 50 per cent fall in the shares of businesses engaging in some types of activities. Whilst there was an expected economic impact on innovation behaviour, the scale of the decline in the activities indicator is exacerbated by a combination of factors (as evidenced by the panel analysis results in Figure 8). The telephone/interviewer led Vs postal survey responses appears to have had the greatest impact as fewer businesses responded to this item over the phone. The scale of the effect is difficult to quantify however. From Figure 1, the most commonly reported activities were acquisition of computer software and hardware, though considerably lower than during the last period (both fell by 18 percentage points). There is also the possibility that

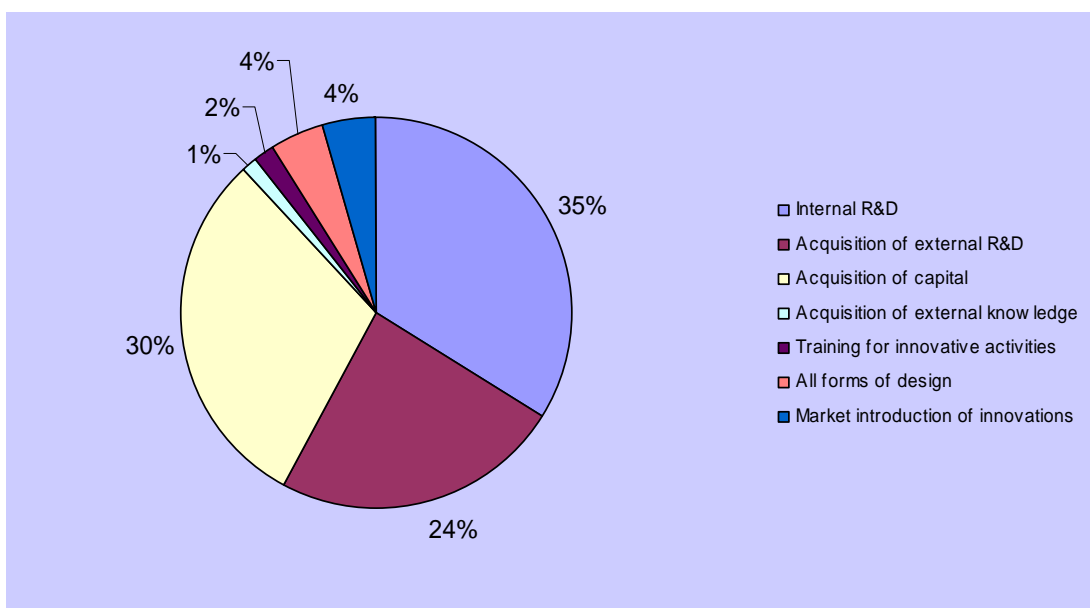
businesses new to the survey are unfamiliar with the concept of innovation. Purchasing new software or hardware that leads to improvements in the development of goods, services or more efficient processes is innovative behaviour.

Figure 1: Breakdown of activities (all enterprises)



Despite fewer numbers of businesses engaging in innovation activities during the 3 year period, we are encouraged that the overall innovation spending in 2010 was strong. Figure 2 below shows the proportions spent across all types of activities.

Figure 2: Innovation expenditure in 2010 (proportion of total expenditure)



The largest share of innovation expenditure in 2010 was on Internal R&D which accounted for a third. This amounted to around £16bn which is in line with recent Business Enterprise Research & Development Expenditure (BERD) 2010 where a 3 per cent increase for civil R&D on 2009 figures was reported.

Non-technological or wider forms of innovation

Innovation is not wholly about the development or use of technology or other forms of product (goods and services) and process change. There are 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 been used.

Enterprises were asked whether they have made major changes to their business structure and practices in the three-year period 2008 to 2010. The organisational innovation questions were revised to match the version found in the harmonised questionnaire. Some of the findings are summarised in Table 2 below. A third of businesses engaged in one or more types of non-technological innovation over the latest survey period. The implementation of new methods of organising work responsibilities and decision making was (marginally) the most commonly reported with new methods of organising external relationships being the least frequent. Again, whilst an exact comparison with previous organisational questions is not possible (note the marketing question remains the same with UKIS 2009), smaller enterprises were more likely to have introduced a major organisational change on this occasion with the difference in take up between SMEs and large firms less pronounced.

Table 2: Enterprises that introduced wider forms of innovation

| Form of innovation | Per cent | | |
|---|------------------|--------------------------------------|------------------------|
| | 10-250 employees | Size of enterprise 250+ employees | All (10+ employees) |
| Wider Innovator | 31 | 35 | 31 |
| New business practices | 15 | 22 | 16 |
| New method of organising work responsibilities | 18 | 22 | 18 |
| New method of organising external relationships | 8 | 11 | 8 |
| Changes to marketing concepts or strategies | 16 | 16 | 16 |

Markets and exports

The businesses surveyed were asked which markets they operated in. Figure 3 below for respondents only shows that regional markets are the most dominant for UK enterprises and just over a half (52 per cent) operate at a national level. Outside of the UK, 26 per cent operated in European markets

and a fifth world-wide. Proportions of businesses surveyed in 2009 were higher in regional markets but other proportions remained the same in 2011.

Exports

Just under a fifth of businesses gave an estimate of exports for the year 2010. The response is well below 2006 when estimates were reported by 30 per cent of respondents. In both surveys, the majority of exporters engaged in some form of innovation behaviour.

Figure 3: Geographical Markets



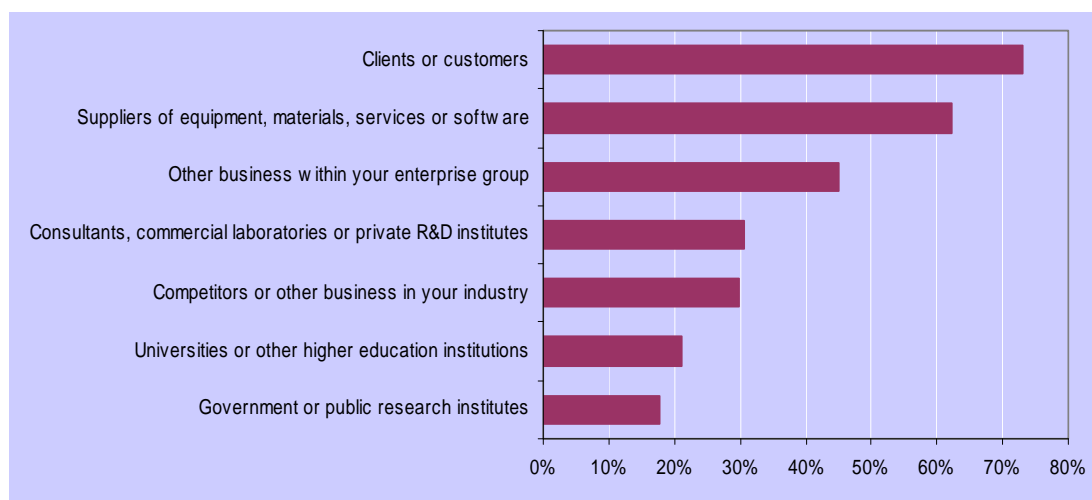
Context for innovation

The following statistics refer to any businesses that engaged in any of the four types of innovation behaviour⁴.

Co-operation agreements and sources of information

Nearly half (47 per cent) of all broader innovating enterprises had co-operation arrangements on some innovation activities, over two thirds (68 per cent) of these collaborations were agreements that operated at a national level. The most frequent partners for co-operation were clients or customers (73 per cent of enterprises with co-operation agreements). Just over a fifth of collaborators included universities amongst their partners. Figure 4 shows the proportions collaborating.

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



Sources of information

The extent to which businesses use external resources in their innovation activities are tabled below. 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.

Respondents that ranked information sources as “high” on a scale from “no relationship” to “high importance” are shown in Table 3. These sources are:

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

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. Interestingly, universities were the only category rated as more important by a higher share of SMEs than large firms.

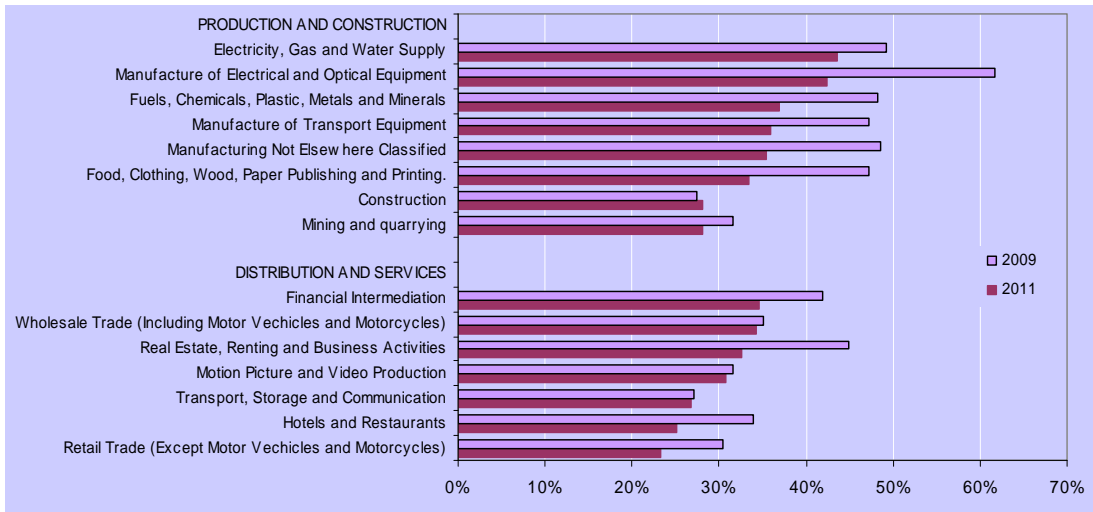
Table 3: Sources of information (% of all firms with some innovation activity rating “high”)

| | Per cent | | |
|--|---------------------|-------------------|------------------------|
| | 10-250 employees | 250+ employees | All (10+ employees) |
| Internal | | | |
| Within your enterprise group | 39 | 52 | 39 |
| Market | | | |
| Suppliers of equipment | 18 | 23 | 19 |
| Clients or customers | 39 | 50 | 39 |
| Competitors or other enterprises in your industry | 14 | 18 | 15 |
| Consultants, commercial labs or private R&D institutes | 4 | 7 | 4 |
| Institutional | | | |
| Universities or other higher education institutes | 3 | 2 | 3 |
| Government or public research institutes | 2 | 4 | 2 |
| Other sources | | | |
| Technical, industry or service standards | 8 | 15 | 8 |
| Conferences, trade fairs, exhibitions | 5 | 5 | 5 |
| Scientific journals and trade/technical publications | 8 | 15 | 8 |
| Professional and industry associations | 6 | 8 | 6 |

Innovation in sectors

The numbers of the newly defined ‘innovation active’ businesses across all industrial and commercial sectors are charted below. A direct comparison with previous survey results is limited due to sectoral reclassification and mapping issues, there obviously was a decline, notably in production. Sectors electricity, gas and water supply and electrical and precision engineering enterprises were the most innovation active, against 28 per cent of enterprises in mining and quarrying, construction and utilities. In distribution and services, financial intermediation, wholesale trade and real estate, renting & business activities (which includes the R&D services sector) had the highest share of innovation active businesses, while retail trade (at 23 per cent) had the lowest share on this occasion.

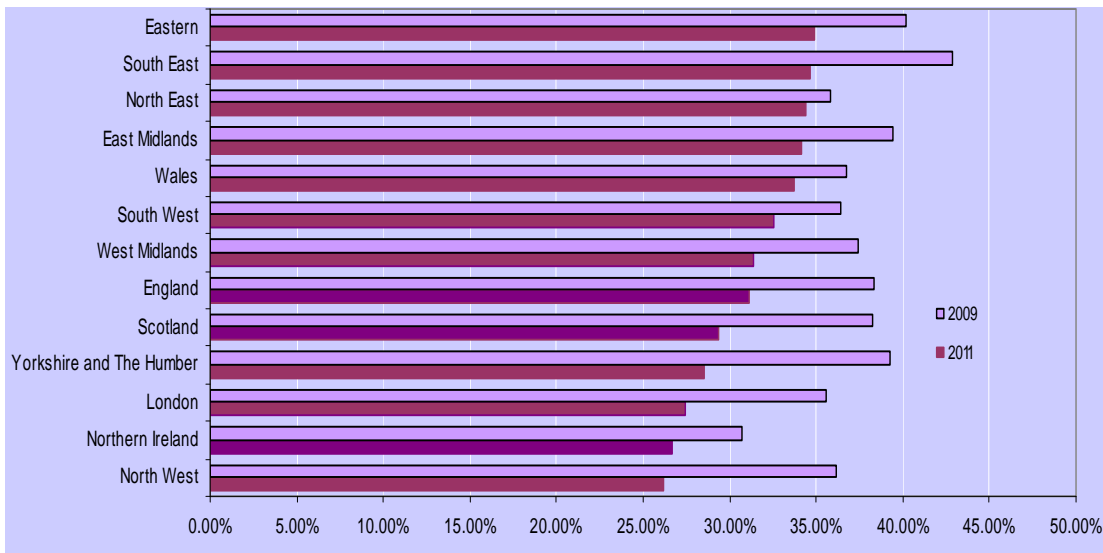
Figure 5: Innovative businesses by industry



Geography of innovation

Figure 6 shows the shares of innovation active businesses across the countries and regions of the UK and includes a comparison with 2009 data based on the revised definition of innovation active. There are 9 percentage points between the least and the most innovation-active region. The move to SIC 2007 has had a marked affect on regional differences. Combined with the new sampling methodology, there has been a shift in the numbers of businesses selected across the regions. For example, in Northern Ireland the selected sample was reduced by almost a half. Despite these sampling alterations, we always remark that regional innovation rankings vary considerably from survey to survey. They are a reflection of the region’s industrial make-up and the associated variability in business and product life cycles across sectors.

Figure 6: Regional innovation patterns



Factors driving innovation

With overall levels of innovation behaviour down, we need to understand what are the drivers to innovation. Respondents were asked to rank a number of drivers for innovating on a scale from no impact, through low, medium or high. Looking at the proportion of respondents⁵ who answered high in each category (Table 4) indicates ‘product-related’ factors were the most frequent drivers, with quality enhancements by far the most motivating factor (38 per cent) followed by increased market share and increasing range of goods and services (31 per cent and 30 per cent respectively). These results reinforce the known strong customer-focused approach to innovation. Reducing environment impacts was the least highly rated factor overall (12 per cent), but a driver for over a fifth of large firms. Note, there is a noticeable difference between the factors motivating large and small/medium enterprises.

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

| Innovation factors | Per cent | | |
|---|--------------------|----------------|-----------------|
| | Size of enterprise | | All Ranked high |
| | 10-250 employees | 250+ employees | |
| Improving quality of goods or services | 38 | 47 | 38 |
| Increasing market share | 30 | 41 | 31 |
| Increase range of goods or services | 30 | 34 | 30 |
| Increasing value added | 25 | 37 | 25 |
| Entering new markets | 23 | 25 | 23 |
| Reducing costs per unit produced or provided | 21 | 34 | 22 |
| Meeting regulatory requirements (including standards) | 21 | 30 | 21 |
| Improving flexibility for producing goods or services | 19 | 25 | 20 |
| Replacing outdated products or processes | 17 | 21 | 17 |
| Improving capacity for producing goods or services | 17 | 22 | 17 |
| Improving health and safety | 15 | 23 | 15 |
| Reducing environmental impact | 12 | 21 | 12 |

Barriers to innovation

Successful and evidence-based policy interventions require an understanding of the barriers to business innovation. These barriers can be internal obstacles that the enterprise encounters while carrying out innovation activities as well as external factors preventing innovation.

The survey asked about a range of constraining factors and their effect on the ability to innovate. Table 5 shows the proportions of respondents who gave a “high” rating to each category of constraint.

Cost factors (the availability and cost of finance in particular) were the most frequently ‘highly’ rated. SMEs perceive all barriers to be greater than large firms. Again, relatively few enterprises felt constrained by a lack of knowledge.

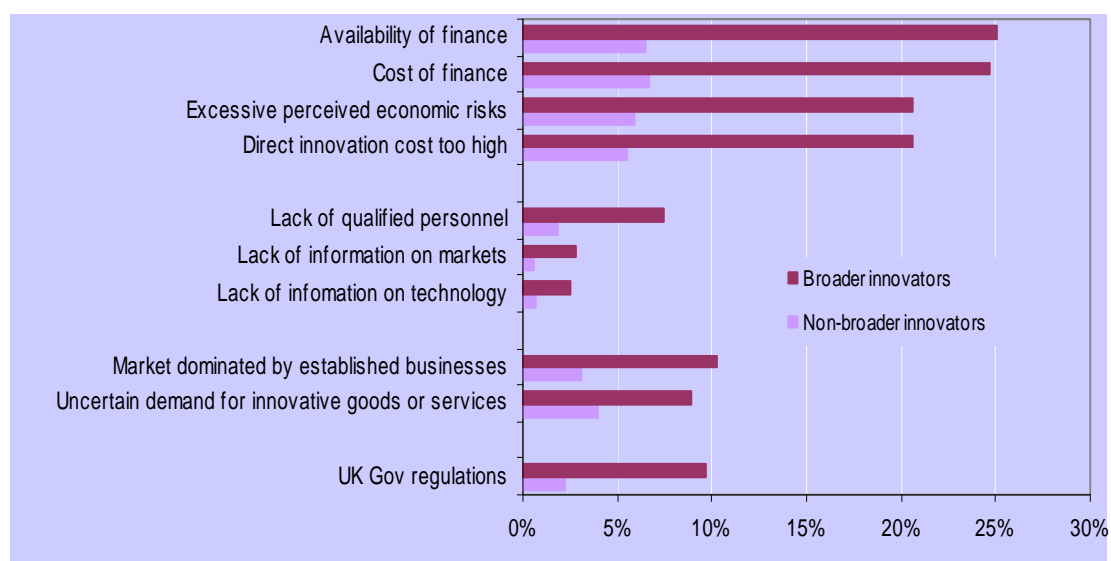
Perversely, the 2011 data shows a decrease in the perception of all barriers to innovate. This is likely to be due to fewer innovators within the data and is discussed further below.

Table 5: Enterprises regarding potential barriers to innovation as “high”

| | Per cent | | |
|---|--------------------|----------------|---------------------|
| | Size of enterprise | | |
| | 10-250 employees | 250+ employees | All (10+ employees) |
| Costs factors | | | |
| Direct innovation cost too high | 12 | 9 | 11 |
| Excessive perceived economic risks | 12 | 8 | 12 |
| Cost of finance | 14 | 7 | 14 |
| Availability of finance | 14 | 7 | 14 |
| Knowledge factors | | | |
| Lack of qualified personnel | 4 | 2 | 4 |
| Lack of information on markets | 1 | 1 | 1 |
| Lack of information on technology | 1 | 2 | 1 |
| Market factors | | | |
| Market dominated by established businesses | 6 | 5 | 6 |
| Uncertain demand for innovative goods or services | 6 | 5 | 6 |
| Other factors | | | |
| UK Gov regulations | 5 | 4 | 5 |

Enterprises engaged in innovation activity were almost 4 times as likely to perceive cost factors as barriers than businesses who did not attempt to innovate (Figure 7). These results reinforce the belief that businesses “learn” about barriers to innovation as a result of their attempts to innovate.

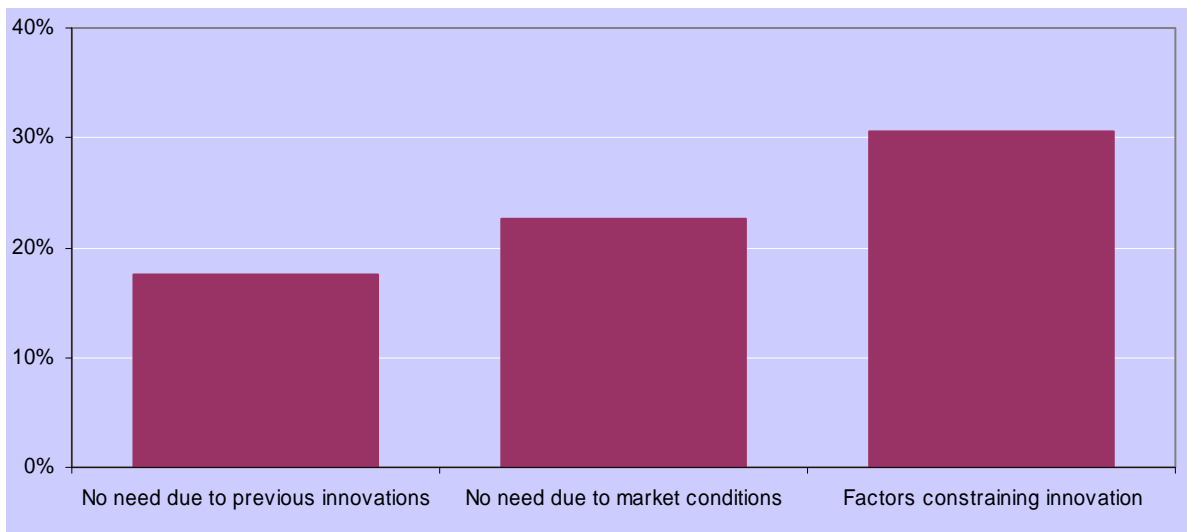
Figure 7: Perception of barriers – comparison of innovators and non-innovators % rating “high”



Non-innovators

The survey also attempts to gain an appreciation of the possible reasons why businesses were not involved in any innovation activity during the period 2008 to 2010. The pattern of response differed from 2009, and earlier, results with a shift to ‘factors constraining innovations’ as the most frequently cited reason by around a third of non-innovators. Just under a quarter of non-innovators reported there was not a market need (Figure 8).

Figure 8: Reasons why enterprises didn’t innovate 2008-2010 (non-innovative enterprises only)



Methods 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. This may involve attempts to exercise formal intellectual property rights, but “strategic” ways of preventing emulation are important for many firms.

In 2011 we combined the 2009 survey question on the use of formal protection methods with the use of strategic approaches to protect innovations. As seen previously, all levels of take-up were low; with registering a trademark the most frequently used formal method and the use of secrecy including non-disclosure agreements the most used informal approach for both SMEs and large firms. We know from earlier surveys that firms see IP as an important tool in protecting their innovations, but all methods have been little used in practice over this survey period as with the last.

Table 6: Percentages of firms reporting protection of innovation

| | Per cent | | |
|---|---------------------|-------------------|------------------------|
| | Size of enterprise | | |
| | 10-250 employees | 250+ employees | All (10+ employees) |
| Apply for a patent | 3 | 6 | 3 |
| Register an industrial design | 1 | 3 | 1 |
| Register a trademark | 4 | 9 | 4 |
| Produce materials eligible for copyright | 3 | 6 | 3 |
| Use secrecy, inc non-disclosure agreement | 7 | 10 | 8 |
| Use complexity of design | 2 | 3 | 2 |
| Use lead-advantage time on competitors | 3 | 4 | 3 |

Skills

In addition to the standard question on the proportion of employees holding a degree or above, the 2011 survey included a new question on skills. It is based on a skills module from the harmonised questionnaire developed by EuroStat for CIS7 and asks businesses about whether they employed, or bought in, certain skills over the survey period. The results are tabled below (Tables 7 and 8). From both tables, the most obvious result is businesses that innovate in some form have higher shares of everything.

Table 7: Skills - average proportion (%) of employees that hold a degree or higher, 2010

| | Per cent | | |
|---------------------------|---------------------|-------------------|------------------------|
| | Size of enterprise | | |
| | 10-250 employees | 250+ employees | All (10+ employees) |
| All | | | |
| Science or eng subjects | 7 | 7 | 7 |
| Other subjects | 9 | 10 | 9 |
| Broader innovators | | | |
| Science or eng subjects | 9 | 8 | 9 |
| Other subjects | 11 | 11 | 11 |
| Non- innovators | | | |
| Science or eng subjects | 3 | 3 | 3 |
| Other subjects | 7 | 8 | 7 |

Table 8: Skills - share (%) of individuals employed in-house with listed skills, 2010

| | Per cent | | |
|---|----------|-----------------------|--------------------|
| | All | Broader innovators | Non- innovators |
| Graphic artists/ layout/ advertising | 15 | 31 | 5 |
| Design of objects or services | 9 | 21 | 2. |
| Multimedia/ web design | 17 | 34 | 5 |
| Software development/ database management | 14 | 31 | 4 |
| Engineering/ applied sciences | 8 | 18 | 2 |
| Mathematics/ statistics | 5 | 11 | 2 |

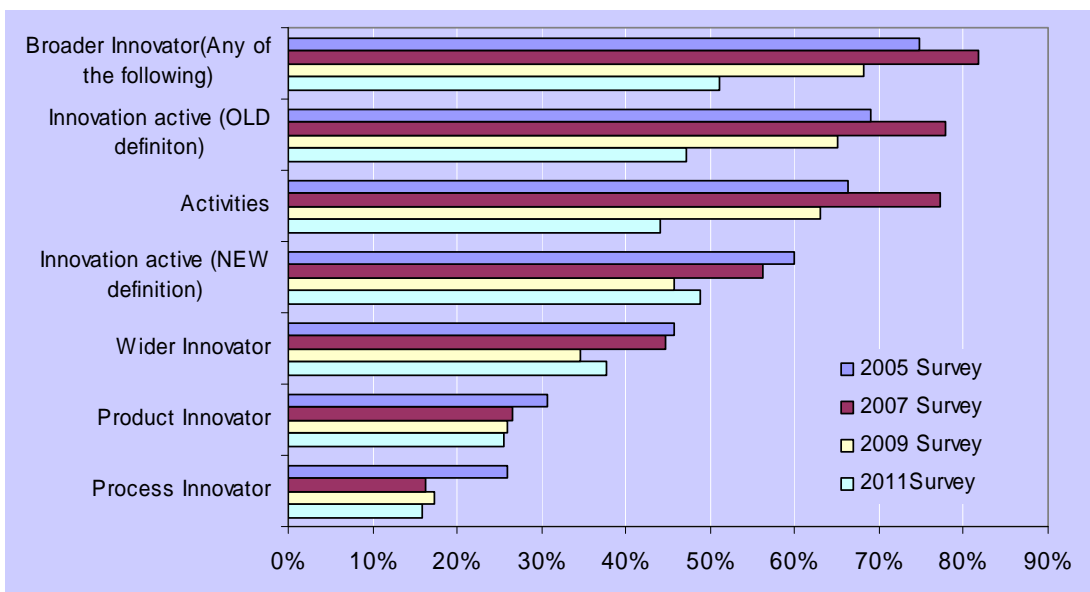
Table 8 shows a marked difference between the level of skills broader innovating firms employ or buy in from external sources. Around a third of broader innovating firms rely on multimedia/web design skills with a similar requirement for graphic artists and software development/database management.

Comparisons with the 2009, 2007 and 2005 UK innovation survey panel

The number of businesses responding to the 2011, 2009, 2007 and 2005 surveys enables some comparison of their innovation activities and outturns. Of the nine hundred and twelve businesses in the four survey panel, around half are small enterprises with both medium and large enterprises accounting for the other half in equal proportions. Figure 9 shows the innovative characteristics of the panel. A comparison with Table 1 shows the 2011 panel results differ from the general survey results with firms in the panel more innovative across all the indicators.

What is especially interesting is the comparison of the panel firms over the last two surveys. Whilst levels of product and process innovation are broadly similar, the innovation activities engagement is around two thirds of its previous level. The general survey results are down by around two fifths, suggesting sampling, data collection and first time respondents effects are impacting on the overall survey results.

Figure 9: UK Innovation Survey panel data, 2011, 2009, 2007, 2005



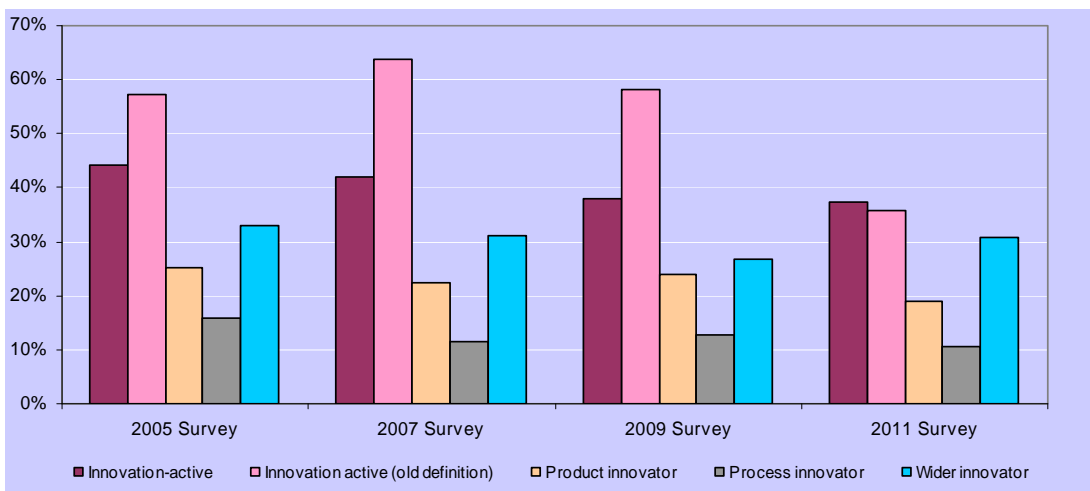
Source: UK Innovation Surveys, 2005, 2007, 2009, 2011

Comparisons with the 2005, 2007 and 2009 UK Innovation Surveys

As already discussed, results are affected by methodological changes such as the move to SIC 2007, changes to the sampling approach and improvements to the layout of the questionnaire⁶. Further, there have been significant changes to some of the questions over the years with organisational innovation completely revised this time around.

That aside, the shares of firms within each type of innovation indicator fluctuate between surveys, often in opposite directions. A general comparison of the main results for the last four surveys in Figure 10 highlights this point. For example, as the reported level of product innovation is higher, the level of undertaking some form of wider innovation is often rather lower and vice versa.

Figure 10: UK IS 2005, 2007, 2009 and 2011 surveys



Source: UK Innovation Surveys, 2005, 2007, 2009 and 2011

Conclusions and next steps

This short paper has reported just a few of the results of the latest innovation survey and on some dimensions of the changes in innovation behaviour in the UK relative to the previous survey in 2009, together with some comparisons with earlier surveys.

The Department for Innovation Business and Skills will publish more extensive detailed survey results over the next few months as well as applying the innovation indicators to policy analysis and monitoring purposes.

⁶ The survey layout, including routing, was changed considerably for UK IS 2009 and revised again in 2011. In particular, changes to questions on organisational innovation question, the reintroduction of strategic protection methods for innovation and additional questions on exports & skills.

The survey represents a major source of data for the research community. As with previous surveys, we expect a substantial body of further research using the survey results to be undertaken and published in various forms over the next few years. Data will be available for researchers in the Virtual Micro Data Laboratory and from the Secure Data Service⁷.

⁷ Details on how to access the VML and SDS can be found here: <http://www.ons.gov.uk/about/who-we-are/our-services/vml/index.html> and <http://www.data-archive.ac.uk/home>

ANNEX A – 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), with assistance from the Northern Ireland Department of Enterprise, Trade and Investment (DETI).

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 seventh iteration of the survey (CIS 7). CIS 6, covering the period 2006 to 2008, was carried out in 2009 and the results form part of various EU benchmarking exercises (see www.cordis.lu/innovation-smes/scoreboard/home.htm).

The UK Innovation Survey 2011 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 yet to complete a postal response. A copy of the questionnaire used can be found on <http://www.bis.gov.uk/policies/science/science-innovation-analysis/cis>

Coverage and Sampling

The survey covered enterprises with 10 or more employees in sections C-K of the Standard Industrial Classification (SIC) 2007.

The sample was drawn from the ONS Inter-Departmental Business Register (IDBR) in January 2011.

Response and weighting

The questionnaires for the survey were distributed on March 31 2011.

Valid responses were received from 14, 342 enterprises to give a response rate of over 50 per cent.

The results in this article 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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