Northern Ireland Statistics and Research Agency
Gníomhaireacht Thuaisceart Éireann um Staitisticí agus Taighde

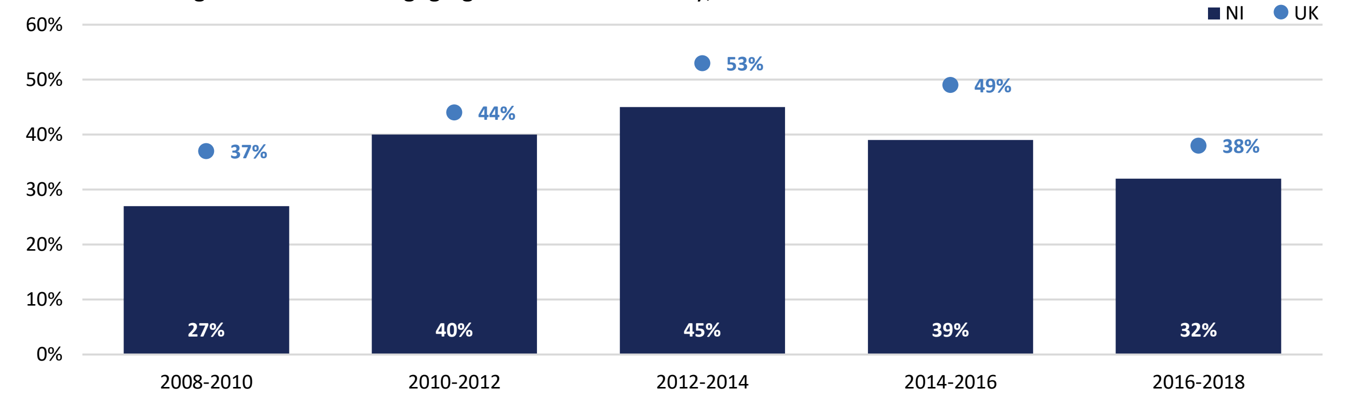
Statistical bulletin

Business Innovation Activity in Northern Ireland

NI statistics from the UK Innovation Survey (2019), covering the period 2016-2018

Innovation activity in NI continues to decline; around a third of businesses engage in innovation.

Chart 1: Percentage of businesses engaging in innovation activity, 2008-2010 – 2016-2018



% of innovation active businesses	% of innovation active large businesses (250+)	% of innovation active SME businesses (10-249)	% of broader innovators with co-operation arrangements
32%	51%	32%	42%
UK 38%	UK 50%	UK 37%	UK 49%
2016-2018	2016-2018	2016-2018	2016-2018

This statistical bulletin reports on innovation activity in NI businesses (with 10 or more employees) in 2016-2018 using results from the UK Innovation Survey. The results show that the percentage of innovation active businesses in NI has continued to decline, with around a third of businesses (32%) engaging in innovation in 2016-2018. The rate of innovation activity was lower in NI than in the UK overall, where 38% of UK businesses were innovation active in 2016-2018.

Across the UK, the percentage of innovation active businesses ranged from 32% in NI and Scotland to 40% in both the South East and South West of England. There has been a reported decrease in innovation activity across all regions of the UK between 2014-2016 and 2016-2018.

As is the case across the UK, a higher proportion of large companies (with more than 250 employees) in NI were innovation active (51%) than small and medium companies (10-249 employees, 32%).

In 2016-18, 42% of NI broader innovator businesses reported having co-operation arrangements for their innovation activities, compared with 49% of broader innovator businesses in the UK overall.

Draft Programme for Government & NICS Outcomes Delivery Plan - Wellbeing Framework

Outcomes: *We prosper through a strong, competitive, regionally balanced economy*
We are an innovative, creative society where people can fulfil their potential

Indicator: *Rate of innovation activity (% of companies engaging in innovation activity)*

This report provides an updated figure for the rate of innovation activity, which is a population indicator included in the wellbeing framework overarching the draft Programme for Government and NICS Outcomes Delivery Plan.

Latest position: 32% of NI businesses were engaged in innovation in 2016-2018, which is significantly lower than the 2012-2014 baseline period (45%).

The latest position in relation to all population indicators in the wellbeing framework is available at this link.

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Department of Finance
An Roinn Airgeadais
www.finance-ni.gov.uk

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Introduction

Defining Innovation

The UK definition of innovation is based on an Organisation for Economic Co-operation and Development (OECD) definition adopted by Eurostat. This definition includes any of the four activities below, if they occurred during the survey period:

1. 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. '***Wider Innovator***'

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

'Innovation Active'

'Broader Innovator'

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 is defined as 'innovation active'. A business that had engaged in ***any*** of the activities described in points 1 to 4 above is defined as a 'broader innovator'.

A business that had engaged in the activity described in point 3 were classed as a 'wider innovator'. It should be noted that the questionnaire used in this latest survey contained 3 additional activities (to the existing 4 activities) to determine whether a respondent engaged in 'wider innovation'. Further information on this change is available on page 10 of this bulletin. A technical note on the impact of this change on the 'innovation active' time series used for PfG monitoring is available on page 12.

About the UK Innovation Survey

The survey (UKIS 2019) is the UK contribution to the eleventh Europe-wide Community Innovation Survey (CIS). The survey focusses on business adoption of innovation through new and improved products and services, investments in different types of innovation, and changes in business structures, management, design, and marketing innovations. The survey also asks businesses about the drivers which motivate innovation and barriers to innovation.

The sample selection was conducted by the Office for National Statistics (ONS) and followed very similar sampling methodology to the previous surveys. Further details of the methodology are available on page 11.

UKIS 2019 (covering innovation activity in the three-year period from 2016 to 2018) sampled 30,942 UK businesses with **ten or more employees**. The survey was voluntary and was conducted primarily through an electronic questionnaire. Businesses that did not complete an electronic response were contacted for a telephone interview. A response was received from 14,040 businesses across the UK, 614 of which were NI businesses (which equated to a response rate of 45% in NI).

About this bulletin

This bulletin focusses on the Northern Ireland responses to UKIS 2019. The period covering 2008-10 was the first survey data collected using a sample based on the Standard Industrial Classification 2007 (SIC 2007). This created a break in the time series, so comparisons to surveys prior to this are not included in this bulletin.

This bulletin presents weighted data, in order to be representative of the business population. The responses were weighted to the total business population, using information from the Inter-Departmental Business Register (IDBR).

The main UK report (and accompanying statistical annex), which includes some regional analysis, is produced by the Department for Business, Energy and Industrial Strategy (BEIS) and was published on 30th July 2020. Data are made available to NISRA following the publication of the BEIS report to enable the production of this NI bulletin.

The statistics in this bulletin are used by a broad range of users with an interest in assessing and reporting on business activity within the NI economy, such as economists in the public and private sector, academics, media and the general public. The bulletin contains statistics used to measure the progress of a number of Government strategies in Northern Ireland, including the Draft Programme for Government and associated NICS Outcomes Delivery Plan, the Draft Industrial Strategy and the Innovation Strategy for Northern Ireland.

We welcome feedback to help us improve and add value to these statistics.

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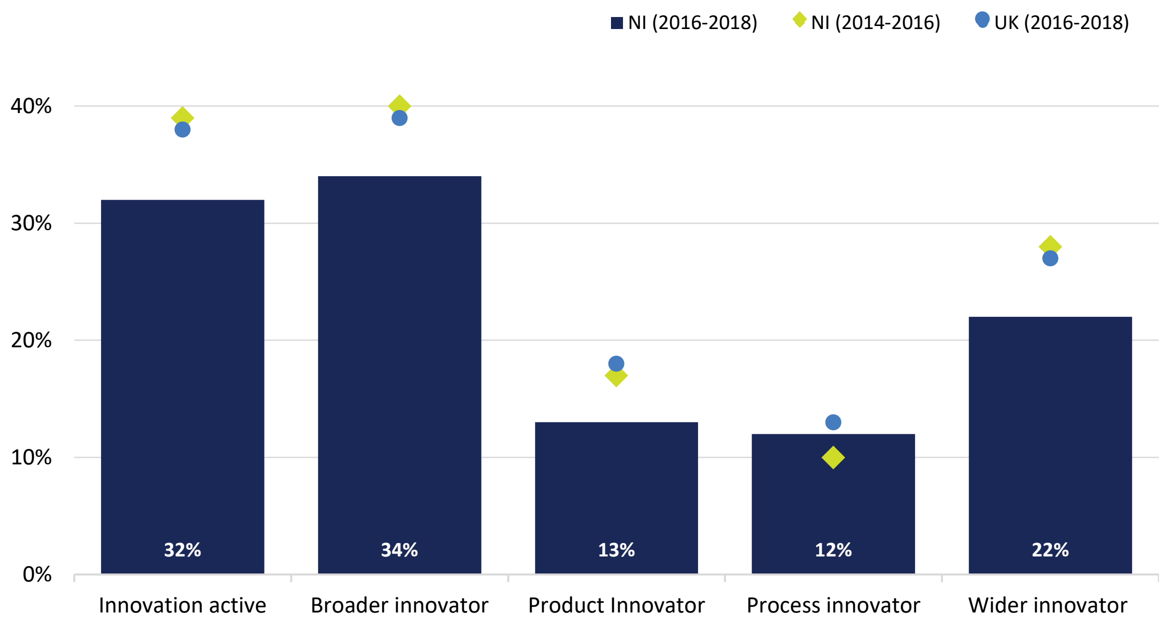
Summary of Innovation Activity

Type of Innovation Activity

Around a third of NI businesses (32%) were innovation active in 2016-2018. This is lower than was the case in 2014-2016 (39%) and remains lower than in the UK overall in 2016-2018 (38%). In 2016-2018, 34% of NI businesses were broader innovators and 22% were wider innovators. Please refer to page 3 for the various definitions of innovation.

Chart 2: Percentage of businesses engaging in innovation by activity,
NI (2014-2016, 2016-2018) and UK (2016-2018)

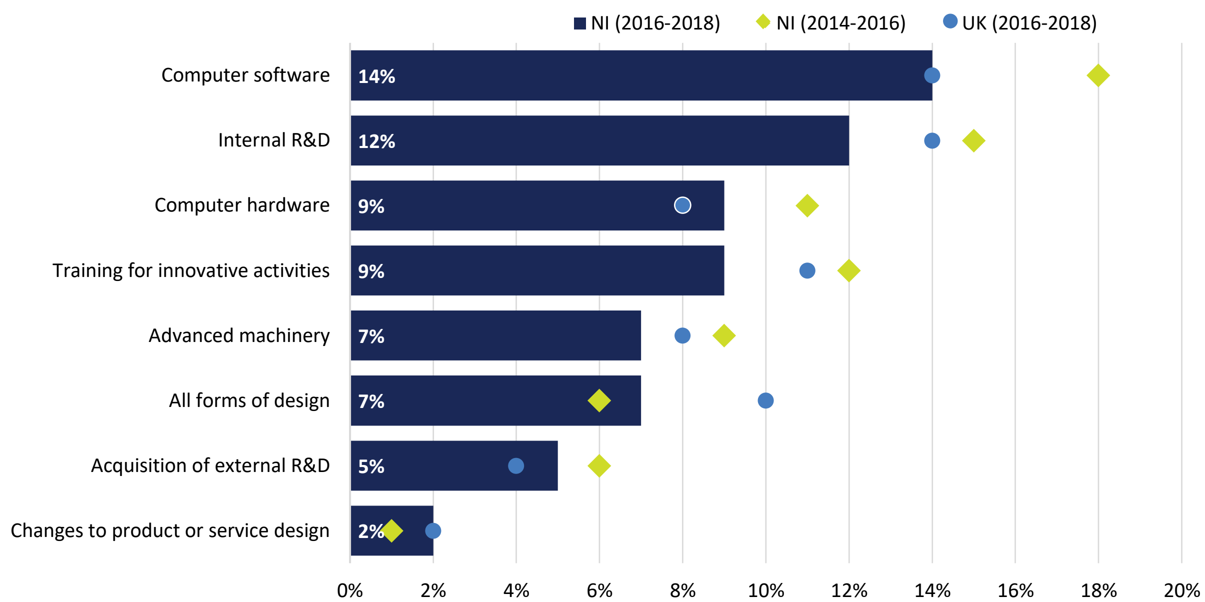


Further breakdowns of NI and UK business innovation activities are available in the Statistical Annex.

Type of Investment

Chart 3 below shows that the most commonly reported innovation investment was in the acquisitions of computer software (which was also the most common type of investment in 2014-2016) followed by internal R&D.

Chart 3: Percentage of all businesses engaging in innovation by type of investment,
NI (2014-2016, 2016-2018) and UK (2016-2018)

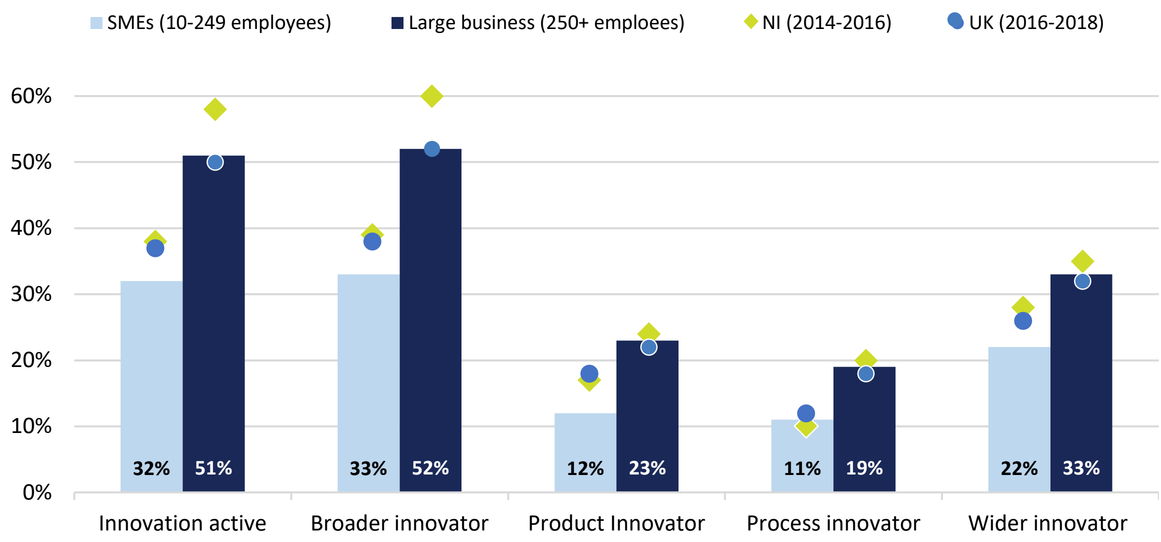


Innovation Activity by Size of Business

Large businesses were more innovation active (51%) than small and medium sized companies (SMEs; 32%) and Chart 4 shows that this was the case for every type of innovation activity. In the UK overall, 50% of large businesses were innovation active, compared with 37% of SMEs.

The levels of innovation activity among large businesses in Northern Ireland were comparable with those among large businesses in the UK in 2016-2018. In contrast, innovation among SMEs tended to be lower in NI than was the case among SMEs in the UK overall (32% and 37% respectively).

Chart 4: Percentage of NI businesses engaging in innovation by activity and size,
NI (2014-2016, 2016-2018) and UK (2016-2018)

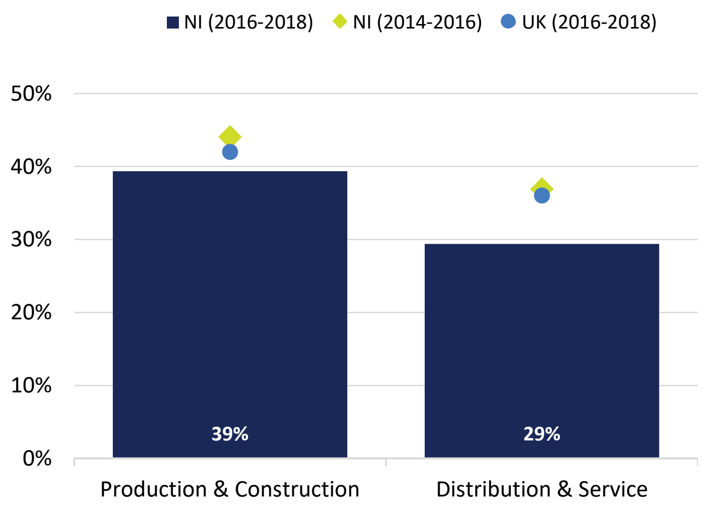


Innovation Activity by Sector

Innovation activity was higher among businesses in Production and Construction industries than in Distribution and Service industries in 2016-2018 (39% compared with 29%). At 29%, the rate of innovation activity among businesses in the Distribution and Service industries is significantly lower than was the case in 2014-2016 (37%).

In the UK overall in 2016-2018, the rate of innovation activity was 42% among businesses in Production and Construction industries and 36% among those in Distribution and Service industries.

Chart 5: Percentage of NI innovation active businesses in Production & Construction and Distribution & Service Industries,
NI (2014-2016, 2016-2018) and UK (2016-2018)



Production & Construction industries include

Mining and Quarrying, Manufacture of food, clothing, wood, paper, publishing & printing, Manufacture of fuels, chemicals, plastic, metals & minerals, Manufacture of electrical and optical equipment, Manufacture of transport equipment, Manufacture not elsewhere classified, Electricity, gas & water supply, and Construction.

Distribution & Service industries includes

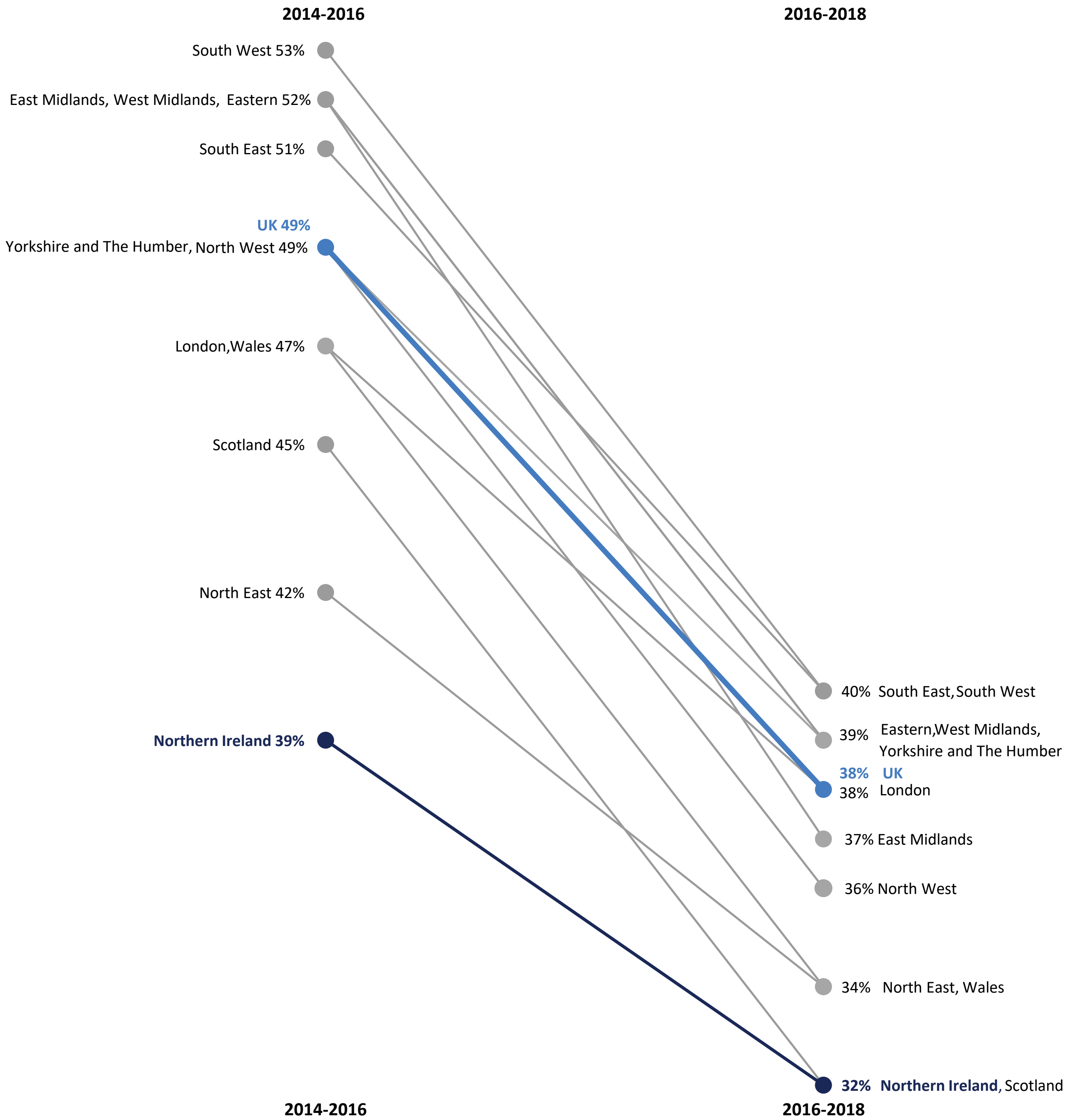
Wholesale trade (including cars & bikes), Retail trade (excluding cars & bikes), Transport, storage & communication, Hotels and restaurants, Financial intermediation, Real estate, renting and business activities, and Motion Picture and Video Production.

Please see the accompanying spreadsheet for further detail on the estimated rates of innovation activity and associated margin of error for the individual sectors listed above.

Innovation Activity by Region

There has been a reported decrease in the rate of innovation activity across all regions of the UK between 2014-2016 and 2016-2018. The largest percentage point drop (-15pps) was in the East Midlands. Across the UK, the percentage of innovation active businesses ranged from 32% in NI and Scotland to 40% in both the South East and South West of England.

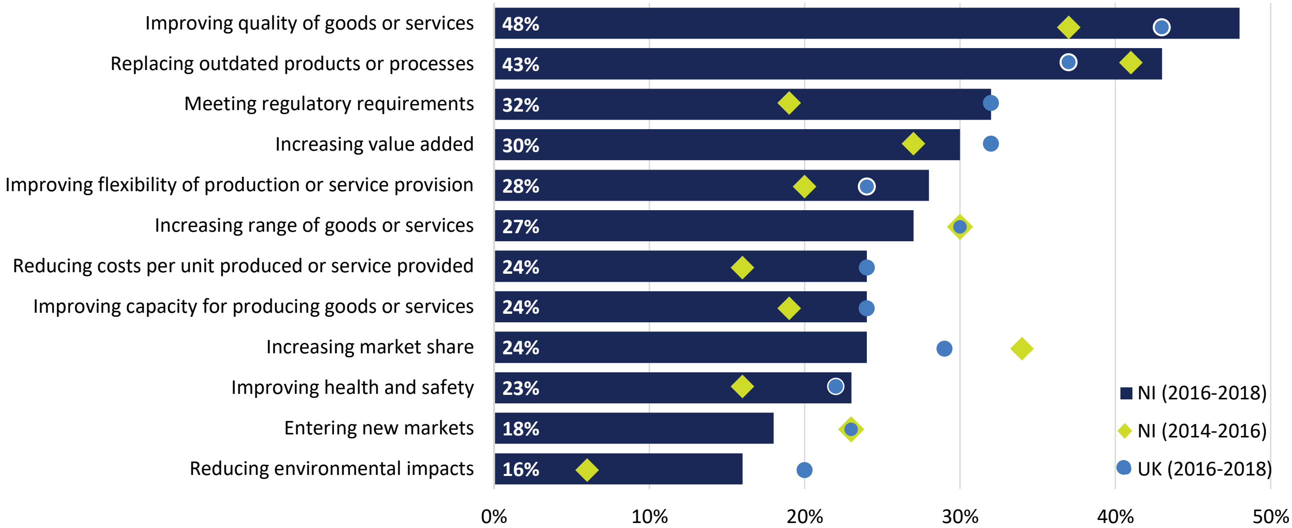
Chart 6: Percentage of innovation active businesses by UK region, 2014-2016 to 2016-2018



Factors Driving Innovation

There are a range of motivations for businesses to engage in broad forms of innovation, which may relate to firms' strategies of improving quality, reducing environmental impacts or increasing value added. In consideration of this, broader innovator businesses were asked how important each of twelve factors (presented in Chart 7) were in driving their innovation activities. The proportion of broader innovator businesses that rated each factor as 'high' in importance is presented below.

Chart 7: Innovation Factors: Percentage of NI broader innovators rating factor as of "high" importance to their decision to innovate, NI (2014-2016, 2016-2018) and UK (2016-2018)



Further breakdowns (by company size) of driving factors for innovation for both NI and the UK are available via the Statistical Annex.

'Improving quality of goods or services' and 'replacing outdated products or processes' are the top-rated factors, being of 'high' importance to 48% and 43% of broader innovators respectively in 2016-2018.

In contrast, 'Reducing environmental impacts' was of 'high' importance to their decision to innovate for 16% of broader innovators, with 'entering new markets' of 'high' importance to 18%.

In the UK overall, 'improving quality of goods or services' was also the top rated factor (43% of broader innovators) and 'Reducing environmental impacts' the least commonly reported driver (20%).

Non-Innovators – Reasons for not innovating

Two-thirds of NI businesses (66%) were categorised as non-innovators[1] in 2016-2018. These businesses were asked to indicate why it had not been necessary or possible to innovate. Just under a quarter of these businesses (23%) indicated that there was no need due to market conditions, while 11% reported that there was no need due to previous innovations. More than half (53%) of non-innovators cited an 'other' reason (no further detail available).

Innovation Co-operation and Support

Co-operation Arrangements - Broader Innovators

Developing innovations of any kind can be a complex process and businesses may decide to work jointly with other businesses and seek access to sources of advice and information to help the creative process.

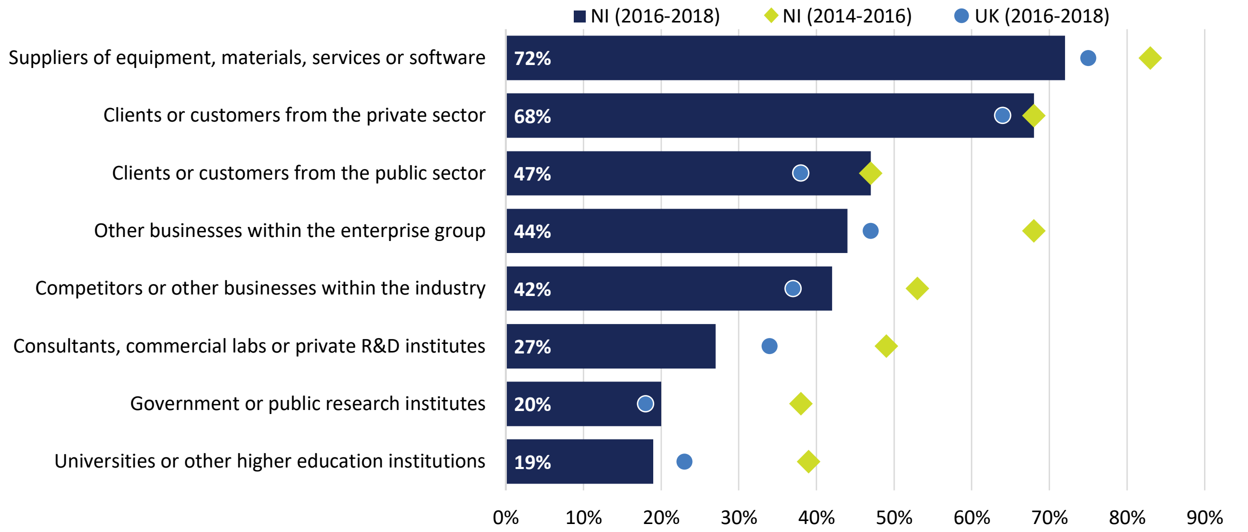
Around two in five broader innovative NI businesses (42%) reported having co-operation arrangements in 2016-2018, lower than was the case in 2014-2016 (51%). Half of broader innovative business (49%) in the UK overall reported having co-operation arrangements in 2016-2018 (compared with 57% in 2014-2016).

[1] i.e. did not report conducting any of the activities which define a broader innovator (see page 2)

In 2016-18, 72% of NI broader innovators with any cooperation arrangements reported partnering with their suppliers, and 68% worked with clients and customers in the private sector.

Around one in five such businesses reported co-operation arrangements with government or public research institutes (20%), with a similar proportion reporting co-operation with universities or other higher education institutions (19%).

Chart 8: Percentage of NI businesses with each type of cooperation arrangement (of broader innovators with any cooperation arrangements only), NI (2014-2016, 2016-2018) and (2016-2018)



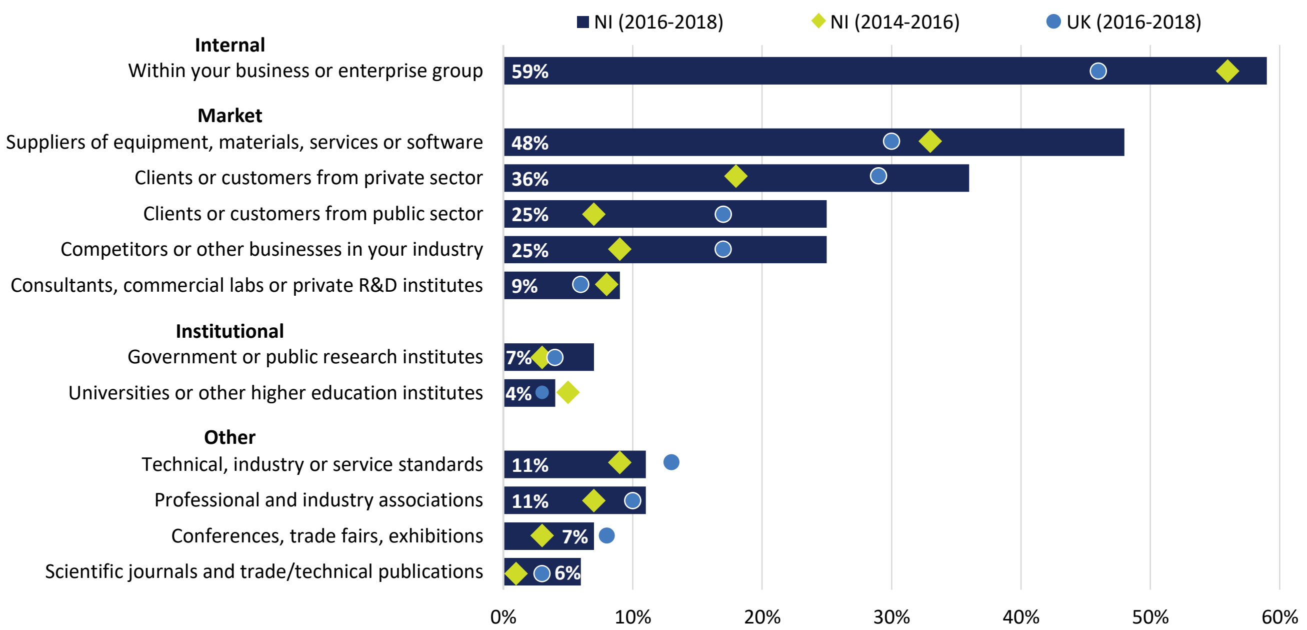
Further breakdowns (by geography of co-operation, and over time) of innovation co-operation in NI and the UK are available via the [Statistical Annex.]

Information Sources Used - Broader Innovators

Broader innovators were asked to rate the importance of a range of information sources to their innovation activities. Three in five broader innovators in NI (59%) felt that information from within their business or enterprise group was highly important to its innovation activities during 2016-2018. This was higher than in the UK overall (46%).

Around half of NI broader innovators reported that information from suppliers was highly important, which was also notably higher than in the UK overall (30%).

Chart 9: Percentage of broader innovator businesses rating the importance of information sources as 'high', NI (2014-2016, 2016-2018) and UK (2016-2018)



Further breakdowns (by size of business and over time) are available via the [Statistical Annex.]

Wider Forms of Innovation

Innovation is not wholly about the development or use of technology or other forms of product or process change. Enterprises can also change their behaviour or business strategies to make themselves more competitive, often in conjunction with product or process innovation, but also as an independent means of improving competitiveness.

1. 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. *'Wider Innovator'*

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

'Innovation Active'

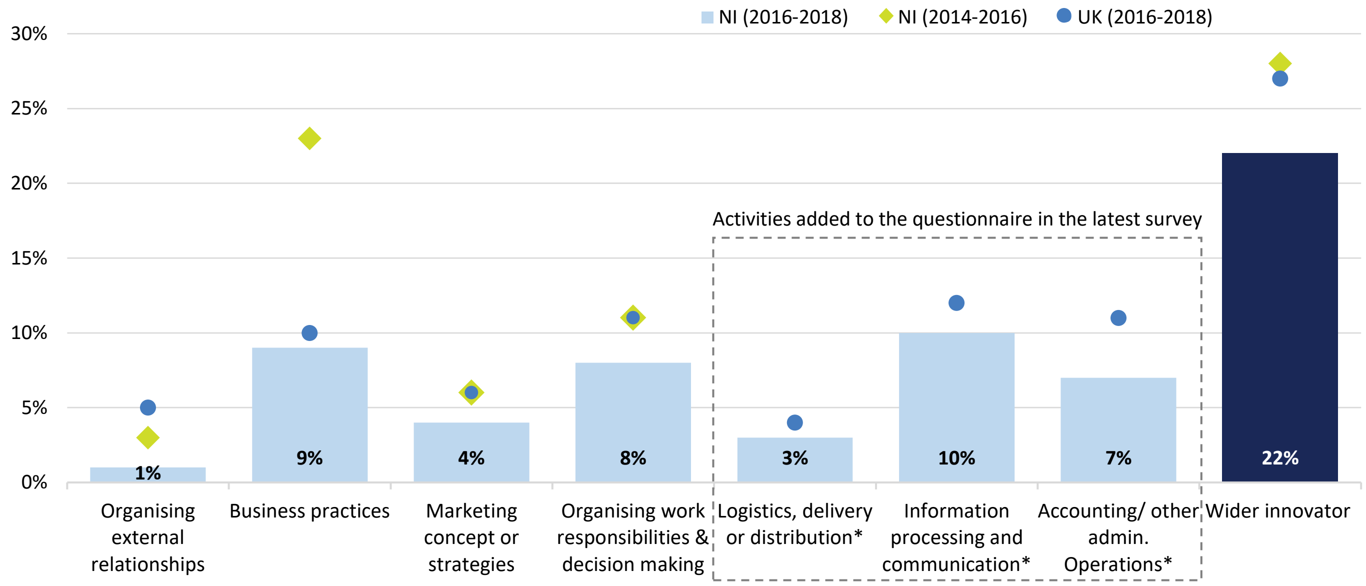
'Broader Innovator'

Enterprises were asked whether they had made major changes to their business structure and practices in the three-year period (2016-2018). Headline results are summarised in Chart 10. Approximately one in five NI businesses (22%) reported any of the wider innovation activities in 2016-2018 (27% in the UK overall).

It should be noted that the questionnaire used in this latest survey contained 3 additional activities (to the existing 4 activities) to determine whether a respondent engaged in 'wider innovation'. These activities were added to ensure that the questionnaire was consistent with the latest framework developed by Eurostat. Please refer to the technical note on page 12, which deals with the impact of this revision on the innovation activity time series.

Compared with 2014-2016, the decline in the proportion of NI businesses reporting wider innovation was most marked in the area of 'New business practices for organising procedures'[2], (from 23% of businesses in 2014-2016 to 9% in 2016-2018). It is not possible to conclude that this has (even in part) been due to the addition of these 3 categories.

Chart 10: Percentage of businesses engaging in wider innovation by activity,
NI (2014-2016, 2016-2018) and UK (2016-2018)



Further breakdowns of NI and UK business innovation activities are available in the [Statistical Annex.]

*Full questionnaire text as follows: "e. New logistics, delivery or distribution methods (eg transportation, service delivery, warehousing or order processing)."
"f. New methods for information processing and communication, the maintenance and provision of information and communication systems (eg hardware, software, data processing, database, maintenance, repair, web-hosting and other computer related information activities)".
"g. New methods for accounting and other administrative operations (eg accounting, book keeping, auditing, payments, other financial or insurance activities and procurement)".

[2] Full questionnaire text: New business practices for organising procedures (eg supply chain management, business re-engineering, knowledge management, lean production, quality management etc)

Background and Methodology

Methodology

This report presents findings from the Northern Ireland element of the UK Innovation Survey (UKIS), which was conducted by the UK Office for National Statistics (ONS). The survey is based on a core questionnaire developed by the European Commission (Eurostat) and Member States. This is the eleventh iteration of the survey (CIS11). CIS10, covering the period 2014 to 2016, was carried out in 2017 and the results form part of various EU benchmarking exercises for international comparisons (see Eurostat: Community Innovation Survey, latest results).

The survey was voluntary and conducted primarily through an electronic questionnaire and telephone interview for businesses that had not yet completed an online response.

The majority of the survey questions are concerned with innovation through new and improved products and processes (technological) and with the investments that are used to develop and implement them along with changes in business structures, management and marketing practices (non-technological innovation).

All results are grossed up to the business population, and all figures quoted relate to the UK Innovation Survey 2019 unless stated otherwise. Results presented are rounded to the nearest percentage point.

The methodology, statistical annex, sample details and initial (headline) UK-level findings from CIS 11 can be found on the UK Department for Business, Energy and Industrial Strategy website.

Coverage and Sampling

The UK Innovation Survey 2019 surveyed 1,362 enterprises in NI. The sample is a stratified design drawn from the Inter-Departmental Business Register (IDBR) with Neyman allocation used to determine the sample size in each stratum. Overall, approximately 15% of the target population is sampled in the UK (21% in NI).

With 614 of the 1,362 enterprises selected responding, the NI element of the survey had a response rate of 45% (at the UK level, a response rate of 45% was also achieved).

The 2019 survey sampled enterprises with **10 or more employees** in **sections B to N** of the Standard Industrial Classification (SIC) 2007. This is the fifth survey using a sample based on SIC 2007, which enables a more consistent comparison with the 2011, 2013, 2015 and 2017 survey data in the time series.

Stratification was based on three variables:

1. **Region** – All regions in the UK (9 Standard Regions in England plus Scotland, Wales and Northern Ireland)

2. **SIC Division** - This was the fifth time survey data was collected using a sample based on SIC 2007. The groups included are as follows:

- **SIC 05-09**: Mining and quarrying
- **SIC 10-18**: Manufacture of food, clothing, wood, paper, publishing, printing
- **SIC 19-25**: Manufacture of fuels, chemicals, plastic, metals and minerals
- **SIC 26-28**: Manufacture of electrical and optical equipment
- **SIC 29-30**: Manufacture of transport equipment
- **SIC 31-33**: Manufacture: not elsewhere classified
- **SIC 35-39**: Electricity, gas and water supply
- **SIC 41-43**: Construction
- **SIC 45-46**: Wholesale trade (including cars & bikes)
- **SIC 47**: Retail trade (excluding cars & bikes)
- **SIC 49-52**: Transport
- **SIC 53**: Post and courier activities
- **SIC 55-56**: Hotels & restaurants
- **SIC 58, 62 & 63**: Computer and related activities/ICT
- **SIC 59-60**: Motion picture, video and TV programme production/programming & broadcasting
- **SIC 61**: Telecommunications
- **SIC 64-66**: Financial intermediation
- **SIC 68**: Real estate activities
- **SIC 69, 70, 75, 76, 78-83**: Other services not elsewhere classified
- **SIC 71.1**: Architectural and engineering activities and related technical consultancy
- **SIC 71.2**: Clinical testing and analysis
- **SIC 72**: Research and experimental development on social sciences and humanities
- **SIC 73**: Advertising and market research
- **SIC 74**: Other professional, scientific and technical activities
- **SIC 77**: Renting of machinery, equipment, personal and household goods

3. **Business Size**:

Small: 10-49 employees

Medium: 50-249 employees

Large: 250+ employees (to ensure representativeness, a census for all large firms was taken)

Response and Weighting

The questionnaires from the survey covered business innovation in the 3-year period, 1 January 2016 to 31 December 2018 (the population and achieved sample are summarised in Table 1 below).

The composition of the 2019 achieved sample comprises the same percentage of large firms (13% of returned forms) as the last survey.

In order to be representative, the responses have been weighted back to the population and this is reflected in the results shown throughout the publication. The responses were weighted back to the population using the inverse sampling proportion in each stratum, that is, the weight attributed to each enterprise was the number of enterprises in the population divided by the number of responses in that stratum.

Table 1: Summary of sample frame (number of enterprises)

Entire Population			**Returned Sample**		
SMEs	Large	All	SMEs	Large	All
6236	193	6429	534	80	614

Please note that as with all sample surveys, the estimates provided in this publication are subject to an associated degree of sampling error (please see the accompanying spreadsheet for some examples of the margin of error associated with results).

Table 2: 95% Confidence Interval for the key rates of innovation activity among businesses in Northern Ireland, 2016-2018

Type of Innovation Activity	**Lower Estimate**	**Estimate (rounded value)**	**Upper Estimate**
Innovation Active	28.6%	32.1% (**32%**)	35.7%
Broader innovator	30.3%	33.8% (**34%**)	37.4%
Product Innovator	10.1%	12.6% (**13%**)	15.1%
Process innovator	9.1%	11.5% (**12%**)	13.9%
Wider innovator	19.3%	22.4% (**22%**)	25.6%

Technical note: Rate of innovation activity time series

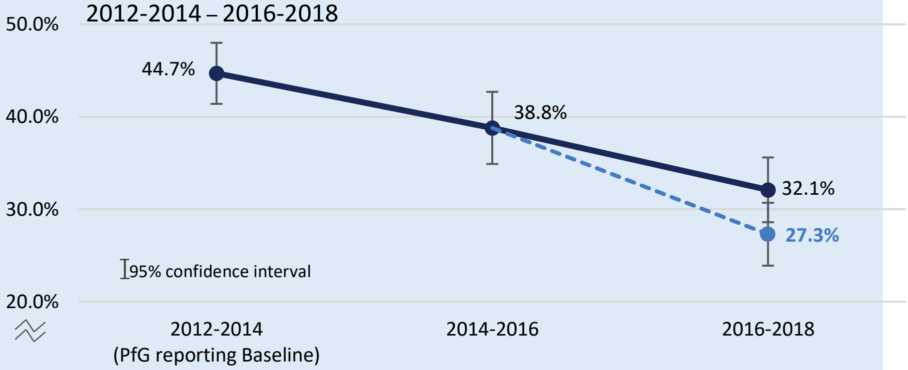
The rate of innovation activity (% of companies engaging in innovation activity) is a population indicator included in the wellbeing framework overarching the draft Programme for Government (PfG) and NICS Outcomes Delivery Plan. It is also used in measuring the progress of the draft Industrial Strategy and Innovation Strategy.

The baseline period for monitoring the PfG indicator is 2012-2014, when the rate was 45% (unrounded: 44.7%).

The latest survey (covering the 2016-2018 period) included 3 additional wider innovation activities which are used (along with other activities) to determine whether a business is 'innovation active' (see Chart 10). The rate of innovation activity during 2016-2018 is reported in this bulletin as 32% (unrounded: 32.1%).

If companies **only** reporting engaging in any of the additional activities (i.e. no engagement in the other activities used to classify a company as 'innovation active') are removed from the numerator, then the rate would fall to 27.3%. This is illustrated in Chart 11.

Chart 11: Percentage of businesses engaging in innovation activity, 2012-2014 – 2016-2018



Future Publications

The 2021 UK Community Innovation Survey headline results for the reporting period 2018-2020 (CIS 12) will be published in spring 2022, with the main report due later that year. The 2021 CIS Northern Ireland results bulletin will be published as soon as possible after the main UK report is published.

For further information

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