

E-commerce QMI

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Release date:

31 October 2013


Next release:

To be announced

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1 . Methodology background

National Statistic	
Survey name	E-commerce and ICT activity
Frequency	Annual
How compiled	Sample based survey
Geographic coverage	UK
Sample size	7,700
Last revised	31 October 2013

2 . Executive summary

The purpose of the annual E-commerce and ICT Survey of business is to measure the adoption and use of Information and Communication Technologies (ICTs) and electronic trading, or e-commerce, by UK businesses. Since the passing of [regulation \(EC\) 808/2004](#) by the European Parliament and Council, the requirements of the [European Statistical Office \(Eurostat\)](#) have driven this survey.

The survey uses the [Organisation for Economic Cooperation and Development \(OECD\)](#) definition of e-commerce. This defines an e-commerce transaction as where goods or services are ordered over the internet, or other electronic networks, regardless of the payment or delivery method.

The survey has been conducted annually since 2000. A sample of approximately 7,700 UK businesses is selected from the [Inter-Departmental Business Register \(IDBR\)](#). The results from the survey are published annually in a sStatistical bulletin on the ONS website, as E-commerce and ICT activity. Results are also submitted to Eurostat.

This report contains the following sections:

- Output quality
- About the output
- How the output is created
- Validation and quality assurance
- Concepts and definitions
- Other information, relating to quality trade-offs and user needs
- Sources for further information or advice

3 . Output quality

This report provides a range of information that describes the quality of the output and details any points that should be noted when using the output.

We have developed [Guidelines for Measuring Statistical Quality](#); these are based upon the five European Statistical System (ESS) Quality Dimensions. This report addresses these quality dimensions and other important quality characteristics, which are:

- relevance
- timeliness and punctuality
- coherence and comparability
- accuracy
- output quality trade-offs
- assessment of user needs and perceptions
- accessibility and clarity

More information is provided about these quality dimensions in the following sections.

4 . About the output

Relevance

(The degree to which the statistical outputs meet users' needs.)

What it measures

The e-commerce survey collects information on the use of Information and Communication Technology (ICT) and the electronic trading by UK businesses.

Frequency

The survey is conducted on an annual basis and the results are published in the November following the end of the reference year.

Sample size

Approx 7,700 businesses in the UK per year.

Periods available

Annually since 2000.

Sample frame

The Inter-Departmental Business Register.

Sample design

Stratified simple random sample.

Weighting and estimation

Each sampled business represents a number of similar businesses and is weighted to reflect the number of businesses within its stratum on the IDBR.

Number-raised estimation is used for the yes or no ICT-use questions.

Ratio estimation is used for quantitative values of e-commerce.

Eurostat is the principal user of the statistics. The UK provides statistics to Eurostat measuring business use of ICT and e-commerce activity, in accordance with [Regulation of the European Parliament and Council 808/2004](#). These estimates are used to provide information that is consistent with other European Union (EU) member states, as part of progress towards measuring EU benchmarking indicators. These EU indicators compare the development and use of ICT in the EU member states and help to provide a better understanding of the adoption of ICT and the internet by businesses at an EU level.

ICT is considered as critical for improving the competitiveness of European industry and, more generally, to meet the demands of society and the economy. Broadband is considered to be important when measuring access to, and use of, the internet. Broadband offers users the possibility to rapidly transfer large volumes of data and keep access lines open. The take-up of broadband is an important ICT policy-making indicator. Widespread access to the internet, via broadband, is regarded as essential for the development of advanced services on the internet, such as e-business, e-government or e-learning.

Until 2010, the EU policy framework for ICT was the i2010 initiative called [A European information society for growth and employment](#), which sought to boost efficiency throughout the EU economy by means of the wider use of ICT. Having undergone a mid-term review, an updated i2010 strategy was presented in April 2008, addressing main challenges for the period 2008 to 2010.

In May 2010, the European Commission adopted [A digital agenda for Europe](#), a strategy for a digital economy by 2020. The Digital Agenda for Europe is one of the seven flagship initiatives under the [Europe 2020 strategy](#) for smart, sustainable and inclusive growth. It outlines policies and actions aimed at maximising the benefit of the digital era to all sections of society and economy.

Timeliness and punctuality

(Timeliness refers to the lapse of time between publication and the period to which the data refer. Punctuality refers to the gap between planned and actual publication dates.)

The time between the end of the reference year and the publication date is approximately 11 months for the e-commerce survey. The results are published in November each year. In the unlikely event of a change to the release dates, public attention will be drawn to the change and the reason fully explained as set out in the [Code of Practice for Official Statistics](#).

For more details on related releases, the [GOV.UK release calendar](#) provides 12 months' advance notice of release dates. If there are any changes to the pre-announced release schedule, public attention will be drawn to the change and the reasons for the change will be explained fully at the same time, as set out in the Code of Practice for Official Statistics.

5 . How the output is created

The e-commerce survey is a paper survey, which is conducted on an annual basis. It is despatched in January with a closing date in February. The completion of the survey is a statutory requirement.

Sample design

The sample design for the survey is a stratified simple random sample. Approximately 7,700 businesses are sampled.

The strata used in the survey are defined by the [UK Standard Industrial Classification of Economic Activities 2007: SIC 2007](#) along with employment sizeband. The employment sizebands used are 10 to 49, 50 to 249, 250 to 999 and 1,000 or more.

The sampling frame used for this survey and most business surveys carried out by the Office for National Statistics (ONS) is the [Inter-Departmental Business Register \(IDBR\)](#).

The IDBR covers businesses from all parts of the economy, other than some very small businesses (self-employed and those without employees and low turnover) and some non-profit making organisations. However, this sector of the economy is not sampled or estimated, so this is not a significant issue.

Neyman allocation is used to assign the sample sizes to strata that minimise the variance of subsequent estimates.

The survey covers businesses within the following industrial sectors, according to the SIC 2007:

- Manufacturing: Divisions 10 to 33
- Utilities: Divisions 35 to 39
- Construction: Divisions 41 to 43
- Wholesale: Divisions 45 to 46
- Retail: Division 47
- Transport and storage: Divisions 49 to 53
- Accommodation and food services: Divisions 55 to 56
- Information and communication: Divisions 58 to 63
- Other services: Divisions 68 to 74, 77 to 82, 95.1

The sectors of the SIC 2007 not covered by the survey are as follows:

- Section A Agriculture, forestry and fishing
- Section B Mining and quarrying
- Division 75 Veterinary activities
- Section O Public administration and defence, social security
- Section P Education
- Section Q Health and social work
- Section R Arts, entertainment and recreation
- Section S Other service activities except SIC 95.1, repair of computers

Estimates in the release relate to businesses with 10 or more employees. No information is collected relating to businesses with fewer than 10 employees as these are not within the coverage requirements defined by Eurostat.

Until the 2004 survey, businesses with fewer than 10 employees were included in the survey, due to a specific user interest from the then Department of Trade and Industry (DTI).

Coverage from 2005 onwards excluded businesses with fewer than 10 employees, as per the Eurostat requirement under EU Regulation 808/2004 due to lack of user interest. The decision to cease collection of information from these businesses was made on the grounds of resources available to run the survey and the burden placed on the businesses in requiring them to take part in the survey.

Data collection

A paper questionnaire is sent to businesses selected for the survey. The data requirements of the questionnaire follow those set out in a model questionnaire developed by Eurostat, in consultation with EU member states. The use of a model questionnaire ensures that comparable data are collected across European countries.

Estimation process

Monetary value estimates of e-commerce sales

These are the questions where businesses are asked to report what proportion of their turnover is derived from e-commerce. Values are estimated by following a five step process.

For each stratum (defined by SIC division and employment sizeband):

1. Multiply the business's returned percentage by its employment at the time of sample selection, as a proxy for the business's e-commerce sales
2. Aggregate for all businesses in the same stratum
3. Divide this total by the employment for all responding businesses in the stratum, to give a weighted percentage for the stratum
4. Multiply this weighted percentage by the Annual Business Survey (ABS) total turnover estimate for the stratum to create an estimate of value of e-commerce sales for the stratum
5. Aggregate the values for all the strata in an employment sizeband to obtain a population estimate of the e-commerce sales value for the SIC division; then aggregate the values in the appropriate SIC divisions to produce industrial sector estimates

The following example demonstrates the process:

	Returned %	Employment	Weighted %
Business 1	0	125	0
Business 2	50	100	5000
Business 3	25	249	6225
		474	11225

The weighted percentage for the cell is then 23.68% (from step 3, using 11225/474). Given the ABS turnover for the cell is £100 million, the e-commerce estimate for the cell is £23.68 million (using step 4).

Employment-related value questions

These are the questions about proportions of employment, for example, the proportion of employees who have a computer at work.

The same five-step estimation procedure is followed, but IDBR employment instead of turnover is used.

Tick box (yes or no) questions

These are the ICT use questions, such as does the business have a website, broadband, does the business sell over the internet and so on. The business responds either yes or no.

This uses number-raised estimation. The procedure for business-weighted estimates is as follows.

By stratum:

1. Calculate percentage of yes responses in the stratum, that is, number of businesses responding yes as a percentage of number responding yes or no to the question
2. Multiply by the population count for the stratum on the IDBR as at time of selection; this gives a count for each stratum
3. Aggregate all the stratum counts
4. Divide by the total population count on the IDBR as at time of selection by SIC division; this gives the population estimate for the percentage of businesses who have responded yes to the question

6 . Validation and quality assurance

Accuracy

(The degree of closeness between an estimate and the true value).

Sampling error

Sampling error arises because the variable estimates are based on a sample rather than a full census of the population. The difference between the estimates derived from the sample and value that would be obtained from a census is referred to as the sampling error. As sampling errors cannot be estimated, standard errors (the standard deviation of the sampling distribution) are used instead. The e-commerce survey provides standard error information tables as point 11 in the background notes.

With approximately 2.1 million businesses listed on the Inter-Departmental Business Register (IDBR), it provides nearly 99% coverage of UK economic activity. Most undercoverage is with businesses with fewer than 10 employees, which are not covered by the survey. Therefore undercoverage is not a significant issue for the survey.

Survey procedures

The survey is despatched to respondents in January, with data processing and analysis taking place prior to Eurostat delivery in October. The survey is statutory.

The returned questionnaires are scanned centrally by ONS's Survey Processing Centre using Optical Character Recognition (OCR) to create an image of each questionnaire. These images are stored electronically, reducing paper handling, retrieval and storage. The paper questionnaire is shredded for confidentiality.

After the data have been electronically read into the survey database, a series of credibility checks are used to assist with the process of validating the data. These are used to ensure that only good quality validated information is included in the results. Detailed checks are carried out to ensure consistency of information on 1 year's questionnaire and where a contributor is selected for more than 1 year then checks are carried out to compare year-on-year consistency of the information.

Data validation checks are automatically applied when the questionnaire is first received and the data validation staff will contact the business to investigate the suspicious data, unless logical corrections can be made if these can be clearly deduced from other returned variables. The questionnaire has a status of "uncleared" until satisfactory explanations are provided by the business for all dubious data items, or errors in data are corrected. Until all errors in data are satisfactorily dealt with, no information from that questionnaire is included in the survey results.

There are two categories of validation checks: critical errors and errors:

- critical errors relate to scenarios that are impossible, for example, a business saying that it does not have internet access, but does have a broadband connection; all critical errors must be dealt with and the relevant information obtained, before the questionnaire will be cleared and included in results
- errors relating to scenarios that appear dubious and need investigating, where the information may or may not be correct; all errors need to be investigated, data will either be amended or confirmed as correct, before the questionnaire is cleared and included in results

No automatic imputation exists for non-responding businesses. All question data must be complete on a questionnaire for the business's data to be included in results. However, where a business has completed the questionnaire and can provide all the required data, apart from percentage values, then missing values will be automatically estimated. This will be based on the values of enterprises in the same stratum who have returned valid percentage values. This enables the question data for the business to be complete and the data for the business will then be included in results.

Revisions are made to the returned data in the previous two survey periods, where appropriate.

7 . Concepts and definitions

(Concepts and definitions describe the legislation governing the output and a description of the classifications used in the output.)

E-commerce and ICT-related concepts follow Europe-wide standards as defined by Eurostat. Electronic commerce refers to transactions over the internet or over other computer networks, for example, electronic data interchange (EDI). Goods and services need to be ordered over these networks but payment and delivery may be conducted offline.

The UK takes an active role in the meetings led by Eurostat to update the model questionnaire each year. At these meetings, EU member states give feedback on how well existing questions have worked or how proposed new ones are expected to work in their countries. These views feed into the formation of the final model questionnaire. As all EU member states follow the same principles for running the survey (for example, using the model questionnaire and surveying the economic activities defined by Eurostat), it is not felt there are further lessons that could be learnt from other countries.

Standard definitions are provided in a methodological manual supplied by Eurostat.

Since the passing of regulation (EC) 808/2004 by the European Parliament and Council, the requirements of the European Statistical Office (Eurostat) have driven this survey.

8 . Other information

Output quality trade-offs

(Trade-offs are the extent to which different dimensions of quality are balanced against each other.)

The e-commerce data are published 11 months after the end of the reference year and the data undergoes extensive checks prior to publication. The response rates are required to be high, at 80%. Main responders who have a significant effect within their sector and/or the total economy are identified.

Assessment of user needs and perceptions

(The processes for finding out about users and uses, and their views on the statistical products.)

A [Quinquennial Review](#) was completed in November 2012, which was awarded a B “good” rating.

In April 2011, a user engagement survey was conducted using a web questionnaire linked from the E-commerce and ICT product page on the Office for National Statistics (ONS) website. We contacted the Heads of Profession for statistics in other government departments, to draw their attention to the user survey and invite them to complete it. There were not enough responses from the user survey to draw conclusions about what other users do with the statistics. However, we receive a range of ad hoc queries and enquiries about the survey from a variety of users, such as academics, researchers and business owners and these indicate that the data are used in a wide range of ways. These include research projects and identifying potential new markets.

The survey contributor questionnaire is reviewed each year and changes to the questionnaire are tested by telephone interviews with a selection of businesses, to ensure that the wording is clear and unambiguous.

9 . Sources for further information or advice

Accessibility and clarity

(Accessibility is the ease with which users are able to access the data, also reflecting the format in which the data are available and the availability of supporting information. Clarity refers to the quality and sufficiency of the release details, illustrations and accompanying advice.)

Our recommended format for accessible content is a combination of HTML webpages for narrative, charts and graphs, with data being provided in usable formats such as CSV and Excel. Our website also offers users the option to download the narrative in PDF format. In some instances other software may be used, or may be available on request. Available formats for content published on our website but not produced by us, or referenced on our website but stored elsewhere, may vary. For further information please refer to the contact details at the beginning of this report.

For information regarding conditions of access to data, please refer to the following links:

- [Terms and conditions](#) (for data on the website)
- [Copyright and reuse of published data](#)
- [Pre-release access](#) (ended from 1 July 2017)
- [Accessibility](#)