

**Documentation of statistics for  
ICT Use in Enterprises 2015**

## **1 Introduction**

The purpose of the statistics is to shed light on the use of ICT in enterprises, including e-commerce and barriers to the use of ICT. The statistics form part of Statistics Denmark's focus on the information society. The survey has been carried out annually since 1998. The survey is harmonized with the EU model questionnaire, which is used in most member states.

## **2 Statistical presentation**

The survey describes the use of ICT in enterprises in Denmark. The following areas are covered: The diffusion and use of ICT and the Internet, including ICT systems and e-commerce. A considerable number of variables are replaced each year as a result of the development of user needs and the need to measure new technology.

### **2.1 Data description**

In the 2015 survey, the statistics cover the following main topics related to ICT usage and e-commerce in enterprises: ICT specialists and recruitment, access to internet and mobile broadband, websites and social media, cloud computing and data sharing, ICT security, e-Commerce and invoicing, big data analysis, barriers to digitalisation and effects from ICT projects and, finally, the introduction of new machinery and equipment.

### **2.2 Classification system**

Survey results are generally reported by activity and size class. The applied activity nomenclature is Danish Industrial Classification 2007 (DB07), internationally NACE Rev.2. By activity groupings, Statistics Denmark's standard groupings are applied. For further information, see [www.dst.dk/db](http://www.dst.dk/db). Size classes are defined in terms of the number of employees, in groupings 10-19, 20-49, 50-99 and 100+.

### **2.3 Sector coverage**

The survey covers private, non-financial enterprises, excluding primary activities such as agriculture, forestry and fishing, mining and quarrying. The financial sector is only covered in the reference periods 2005 to 2010.

## **2.4 Statistical concepts and definitions**

**Cloud Computing:** Cloud computing refers to ICT services that are used over the internet to access software, computing power, storage capacity etc., where the services have all of the following characteristics: i) are delivered from servers or service providers, ii) can be easily scaled up or down, iii) can be used on-demand by the user, at least after the initial set-up, iv) are paid for, either per user, by capacity used, or they are pre-paid.

**E-commerce:** E-commerce is the sale or purchase of goods or services conducted over the internet or other computer networks. Orders placed by e-mail are not included. The payment and delivery of the goods or services do not have to be conducted online. E-commerce covers: i) web e-commerce, i.e. orders made at an online webshop or via web forms on the internet or extranet, and ii) EDI e-commerce, i.e. orders placed through electronic transmission of EDI-type business messages allowing for automatic processing and without the individual message or order being manually typed. EDI e-commerce in practice is business-to-business e-commerce.

**Enterprise:** Enterprise with min. 10 employees.

**Speed of Internet Connection:** The maximum contracted download speed of the fastest internet connection.

**Use of Social Media:** An enterprise is seen as an active user of social media, if it has a user profile, an account or a user license to a social media. Advertising alone does not imply active use. Social media are sites where contents may be shared with other users. Social media include social networks (such as Facebook and LinkedIn), multimedia content-sharing websites (such as YouTube, Flickr and Picasa), enterprise's own blog or microblog (such as Twitter) and wiki-based knowledge sharing tools.

## **2.5 Statistical unit**

Enterprise.

## **2.6 Statistical population**

The population is private, non-financial enterprises with 10 or more persons employed. The population does not include primary activities such as agriculture, forestry and fishing, mining and quarrying.

## **2.7 Reference area**

Denmark.

## **2.8 Time coverage**

1998-

## **2.9 Base period**

Not relevant for this statistics.

## **2.10 Unit of measure**

Per cent of enterprises.

## **2.11 Reference period**

01-01-2015 - 31-12-2015

## **2.12 Frequency of dissemination**

The survey is published annually.

## **2.13 Legal acts and other agreements**

The Act on Statistics Denmark (Lov om Danmarks Statistik), cf. Order no. 15 of 12 January 1972, as amended by Act no. 386 of 13 June 1990, Act no. 1025 of 19 December 1992 and Act no. 295 of 2 May 2000. EU Commission Regulation (EC) No 960/2008.

From 2006 the survey is a part of the EU regulation on statistics on the Information Society (EC regulation No. 808/2004).

## **2.14 Cost and burden**

1325 hours.

## **2.15 Comment**

[It-anvendelse i virksomheder.](#)

## **3 Statistical processing**

The statistics is annual and questionnaire-based. Information is reported digitally.

Validation includes checks and supporting information built into the digital form, combined with subsequent checks and recontact to reporting enterprises.

The published results are grossed up to population level. Stratification is based on activity and enterprise size class.

### **3.1 Source data**

The survey is based on questionnaire information from a sample of enterprises.

### **3.2 Frequency of data collection**

Yearly.

### **3.3 Data collection**

Digital reporting via virk.dk. See [www.dst.dk/itanvendelse](http://www.dst.dk/itanvendelse).

### **3.4 Data validation**

A number of checks and validation mechanisms as well as reporting aides for the reporter's understanding of the questionnaire are built into the digital form. This includes among other things checks on sum totals of quantitative fields (e.g. that reported percentages add to 100 per cent) as well as filter and routing mechanisms (e.g. so that information cannot be reported in fields, where the enterprise should not provide any information). Once data is received by Statistics Denmark a number of additional checks are performed. These are performed in part at macro level, where e.g. the results for a given variable for an activity group or size class are compared to the ones from the previous survey period. Further validation is carried out at micro level, i.e. at the level of the individual enterprise. This includes e.g. comparison of the reported e-commerce figures with those reported previously. In both macro and micro level validation background information from Statistics Denmark's Statistical Business Register is used. Finally, in addition to this, checks involve identifying outliers, i.e. reported data with extreme values, for certain variables. In some cases validation results in recontacting the reporting enterprise for a clarification of the reported data.

### **3.5 Data compilation**

The published results are raised to the level of the population. A stratified random sampling is used on the basis of the activity of the enterprise and the number of employees. By grossing up a reweighting and calibration using regression techniques is applied to the weight of the individual enterprise. Imputation is not used, neither in the case of partially lacking information in the individual record (item non-response), nor in the case of completely lacking reporting from an enterprise (unit non-response). The latter, instead, is handling through reweighting as part of the grossing up procedure.

### **3.6 Adjustment**

No further corrections are undertaken than those already described under validation and treatment.

## **4 Relevance**

*Users:* Ministries, industry trade associations, the press, private companies and students.

*Areas of use:* The Government's annual ICT status report plus other publications, international comparisons, private market analysis, reports at institutions of higher education etc.

### **4.1 User Needs**

*Users:* Ministries, industry trade associations, the press, private companies and students.

*Areas of use:* The Government's annual ICT status report plus other publications, international comparisons, private market analysis, reports at institutions of higher education etc.

## 4.2 User Satisfaction

No user satisfaction survey has been carried out.

## 4.3 Data completeness rate

Requirements in regulation and guidelines are met.

## 5 Accuracy and reliability

The population covers private enterprises with 10 or more persons employed. The population covers private, non-financial enterprises, excluding primary activities such as agriculture, forestry and fishing, mining and quarrying. The survey covers approximately 70 per cent of employment in the activity groups covered by the survey. The survey is questionnaire based, and the response rate is 97,6 per cent. The quality of the statistics is considered to be high.

### 5.1 Overall accuracy

The population covers private enterprises with 10 or more persons employed. The population covers private, non-financial enterprises, excluding primary activities such as agriculture, forestry and fishing, mining and quarrying. The financial sector is only covered in the reference periods 2005 to 2010. The survey covers approximately 70 per cent of employment in the activity groups covered by the survey. 4164 enterprises from a total population of 15263 formed the sample for the 2015 survey. The sample is stratified by activity and size class. The response rate is 97,6 per cent. Non-response is due to bankruptcy, take-overs etc. The survey is questionnaire based, and data is collected by digital reporting through [virk.dk](http://virk.dk). Validation comprises macro and micro validation and some extent of recontact with enterprises. In the survey design, each observation will represent more elements in the population. The weights assigned to each observation are calculated using generalising regression estimates. Accuracy and error calculations have been produced. Overall, the response rate is high (above 95 per cent) and the scale of non-response is limited.

### 5.2 Sampling error

Variable: estimated share (95% confidence interval, lower and upper)

- Enterprises with a website (all enterprises): under preparation (under preparation; under preparation)
- Enterprises with web-sales (all enterprises): under preparation (under preparation; under preparation)

Put differently, the above implies that the share of enterprises with a website, with a probability of 95 per cent, is between the lower and upper share in brackets above, but that the estimated share in the statistics is the percentage prior to the brackets.

Uncertainty is higher when breaking down by activity or size class.

### 5.3 Non-sampling error

Uncertainty relates to non-response, and this is limited in scale. In general, the response rate is very high (above 95 per cent), and the scale of item non-response is considered limited.

#### **5.4 Quality management**

Statistics Denmark follows the recommendations on organisation and management of quality given in the Code of Practice for European Statistics (CoP) and the implementation guidelines given in the Quality Assurance Framework of the European Statistical System (QAF). A Working Group on Quality and a central quality assurance function have been established to continuously carry through control of products and processes.

#### **5.5 Quality assurance**

Statistics Denmark follows the principles in the Code of Practice for European Statistics (CoP) and uses the Quality Assurance Framework of the European Statistical System (QAF) for the implementation of the principles. This involves continuous decentralized and central control of products and processes based on documentation following international standards. The central quality assurance function reports to the Working Group on Quality. Reports include suggestions for improvement that are assessed, decided and subsequently implemented.

#### **5.6 Quality assessment**

The population covers private enterprises with 10 or more persons employed. The population covers private, non-financial enterprises, excluding primary activities such as agriculture, forestry and fishing, mining and quarrying. The financial sector is only covered in the reference periods 2005 to 2010. The survey covers approximately 70 per cent of employment in the activity groups covered by the survey. 4164 enterprise from a total population of 15263 formed the sample for the 2015 survey. The sample is stratified by activity and size class. The response rate is 97,6 per cent. Non-response is due to bankruptcy, take-overs etc. The survey is questionnaire based, and data is collected by digital reporting through virk.dk. Validation comprises macro and micro validation and some extent of recontact with enterprises. In the survey design, each observation will represent more elements in the population. The weights assigned to each observation are calculated using generalising regression estimates. Accuracy and error calculations have been produced. Overall, the response rate is high (above 95 per cent) and the scale of non-response is limited.

#### **5.7 Data revision - policy**

Statistics Denmark revises published figures in accordance with the [Revision Policy for Statistics Denmark](#). The common procedures and principles of the Revision Policy are for some statistics supplemented by a specific revision practice.

#### **5.8 Data revision practice**

Not relevant for this statistics.

### **6 Timeliness and punctuality**

The statistics are published 7 months after the end of the reference period. No preliminary figures are published. Results are published in September, where the reference period is January (and, for some variables, the previous calendar year).

## **6.1 Timeliness and time lag - final results**

The statistics are published 7 months after the end of the reference period. No preliminary figures are published. Results are published in September, where the reference period is January (and, for some variables, the previous calendar year).

## **6.2 Punctuality**

The statistics are usually published without delay in relation to the scheduled date. This also applies to data transmissions to Eurostat.

## **7 Comparability**

The survey is harmonized with the EU model questionnaire, which is used in most member states.

### **7.1 Comparability - geographical**

The survey is harmonized with the EU model questionnaire, which is used in most member states, and the results are therefore generally comparable.

### **7.2 Comparability over time**

By comparisons over time, the following changes should be taken into account.

Enterprise size classes covered in the survey over time

- 1998: 20+ employees
- 1999: 10+ employees
- 2000-2002: 5+ employees
- 2004-: 10+ employees

Notable changes in the industry coverage. The financial sector is only included in 2005-2010.

*Weighting results:* The published results in 1998 and 1999 were not raised to the total population at the publishing. Figures from 1999 have subsequently been raised for later publications.

### **7.3 Coherence - cross domain**

Statistics Denmark also produces statistics on ICT expenditure in enterprises as well as the ICT usage by households and individuals.

### **7.4 Coherence - internal**

A number of checks and validation mechanisms as well as reporting aides for the reporter's understanding of the questionnaire are built into the digital form. This includes among other things checks on sum totals of quantitative fields (e.g. that reported percentages add to 100 per cent) as well as filter and routing mechanisms (e.g. so that information cannot be reported in fields, where the enterprise should not provide any information).

## **8 Accessibility and clarity**

*News from Statistics Denmark* and *It-anvendelse i virksomheder* (annual publication).

The main results are available in Danish on Statistics Denmark's homepage at the address [Statistics Denmark's homepage](#).

### **8.1 Release calendar**

The publication date appears in the release calendar. The date is confirmed in the weeks before.

### **8.2 Release calendar access**

The Release Calendar can be accessed on our English website: [Release Calendar](#).

### **8.3 User access**

Statistics are always published at 8:00 a.m. at the day announced in the release calendar. No one outside of Statistics Denmark can access the statistics before they are published.

### **8.4 News release**

Most recent publications can be found at [Most recent publications](#).

### **8.5 Publications**

Results are published in *It-anvendelse i virksomheder* (annual publication). The main results are available in Danish on Statistics Denmark's homepage at the address Statistics Denmark's homepage.

### **8.6 On-line database**

[Statbank](#).

### **8.7 Micro-data access**

The basic material (questionnaires and database) is stored for a number of years. Access to anonymised micro data may be granted under the rules for research access.

### **8.8 Other**

Results are transmitted annually to Eurostat.

### **8.9 Confidentiality - policy**

For a description of Statistics Denmark's policy on confidentiality, see (<http://dst.dk/ext/formid/datafortrolighed>).

## **8.10 Confidentiality - data treatment**

In connection to publication and delivery of customized statistics, a so-called confidentiality test of data is made. The confidentiality test is made on the basis of two criteria:

1. The number criteria: If one data cell contains less than 3 observations (enterprises) employment and financial information can not be published
2. The dominance criteria: If one or two observations (enterprises) contained in one data cell, alone or together constitute a certain percentage of the total turnover of the cell, the turnover and other financial information for this group can not be published.

## **8.11 Documentation on methodology**

More detailed documentation about the methodology is available in the annual report *It-anvendelse i virksomheder*.

## **8.12 Quality documentation**

Results from the quality evaluation of products and selected processes are available in detail for each statistics and in summary reports for the Working Group on Quality.

## **9 Contact**

The administrative placement of this statistics is in the division of Business Dynamics. The person responsible is Michael Elgaard Nielsen, tel. +45 3917 3143, e-mail: men@dst.dk

### **9.1 Contact organisation**

Statistics Denmark

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Business Dynamics, Business Statistics

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