

# Survey on Information and Communication Technology (ICT) Usage in Enterprises

**Aslıhan KABADAYI**  
**TurkStat Expert**  
**Sectoral Statistics Department**  
**Science and Technology Statistics Group**



**December, 2020**

# Outline

## Methodology

- Purpose, Legal Basis, Coverage, Classification, Statistical Unit, Sampling and Estimation

## Survey Process

- Survey design and preparation
- Data collection
- Data editing and analysis
- Dissemination



# Methodology

## Purpose

- to determine criteria of Information Society and producing related statistics,
- to collect and disseminate harmonized and comparable information on the use of Information and Communication Technologies in enterprises at national level.



## Methodology

### Legal Basis - European Council

- Implementation of Article 5 of Regulation (EC) No 808/2004 of the European Parliament and of the Council of 21 April 2004 concerning Community statistics on the Information Society (OJ L143, 30.04.2004, p. 49).
- The latest amendment of (EC) No 808/2004 is Regulation (EC) No 1006/2009 of the European Parliament and of the Council of 16 September 2009 (OJ L286, 31.10.2009, p. 31).



European Council

<https://ec.europa.eu/eurostat/web/digital-economy-and-society/legislation>

# Methodology

## Legal Basis - Turkey

The results of this survey provides the necessary background data for monitoring and evaluation for the following action and strategy plans:

- Information Society Strategy and Action Plan (2015-2018)
- 2016-2019 National E-Government Strategy and Action Plan
- 2019-2023 Information and Communication Technologies Authority (Turkey) Strategic Plan
- e-Turkey Project



## Methodology

### Legal Basis - TurkStat

- Statistics Law of Turkey
- Official Statistics Programme
- Instruction on Methods and Principles Regarding Revisions on Statistical Data Produced by TurkStat
- Instructions for the Access and Use of Micro Data

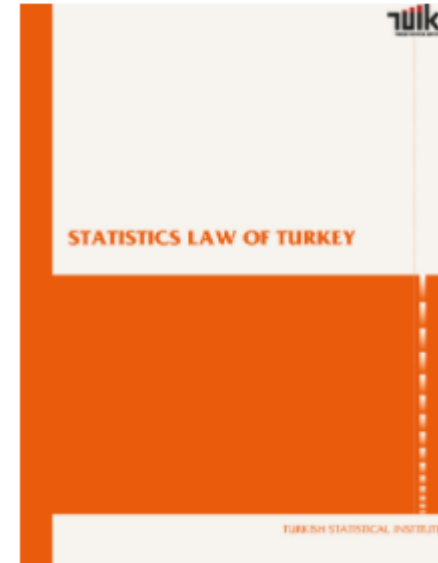


# Methodology

## Legal Basis – TurkStat - Statistics Law of Turkey

The main purpose of this law is;

- to determine basic principles and standards concerning the production and organization of official statistics.
- to ensure coordination among institutions and organizations that are involved in the statistics process prescribed in the Official Statistics Programme.



## Methodology

### Legal Basis – TurkStat - Official Statistics Programme

- The Official Statistics Programme (OSP) is based on the Statistics Law of Turkey.
- OSP is prepared to determine the basic principles and standards dealing with the production and dissemination of official statistics and to produce reliable, timely, transparent and impartial data required at national and international level.
- OSP is prepared for a 5-year-period. The third OSP will be implemented in 2017-2021.





## Methodology

### Legal Basis – TurkStat - Official Statistics Programme

- TurkStat conducts its all activities within the framework of OSP.
- OSP provides assurance for ICT statistics in enterprises to be produced regularly.
- TurkStat carries out the Survey on ICT Usage in Enterprises by EU methodology annually and aims to provide statistics for monitoring and evaluation of Information Society Strategies within the framework of OSP.



- **Survey on Information and Communication Technology (ICT) Usage in Enterprises** is an annual survey conducted by Eurostat since 2002.
- This survey has been conducted annually since 2005 by TurkStat collecting data on the use of information and communication technology, the Internet, e-government, e-business and e-commerce in enterprises in conformity with Eurostat methodology.



## Methodology - Coverage

### Geographical coverage:

- All enterprises located in any part of Turkey.

### Sectoral coverage:

- Enterprises are classified in the following categories of NACE Rev. 2:
  - Section C Manufacturing
  - Sections D and E Electricity, gas and steam, water supply, sewerage and waste management
  - Section F Construction);
  - Section G Wholesale and retail trade, repair of motor vehicles and motorcycles
  - Section H Transportation and storage
  - Section I Accommodation and food service activities
  - Section J Information and communication
  - Section L Real estate activities
  - Divisions 69–74 Professional, scientific and technical activities
  - Section N Administrative and support activities
  - Group 95.1 Repair of computers (*since 2010*)

## Methodology - Coverage

### Enterprise size:

- Enterprises with 10 or more persons employed.

### Size class breakdowns:

- **small enterprises:** 10–49 persons employed
- **medium-sized enterprises:** 50–249 persons employed
- **large enterprises:** 250 or more persons employed



## Methodology - Period

### Referans period:

- The periodicity is annual.
- Referans period is previous year (2019) for the value or % of sales/orders data and where specified. Where not specified respondents should consider as reference their current situation (survey period in 2020).

### Survey period:

- TurkStat applies the survey in April-June.

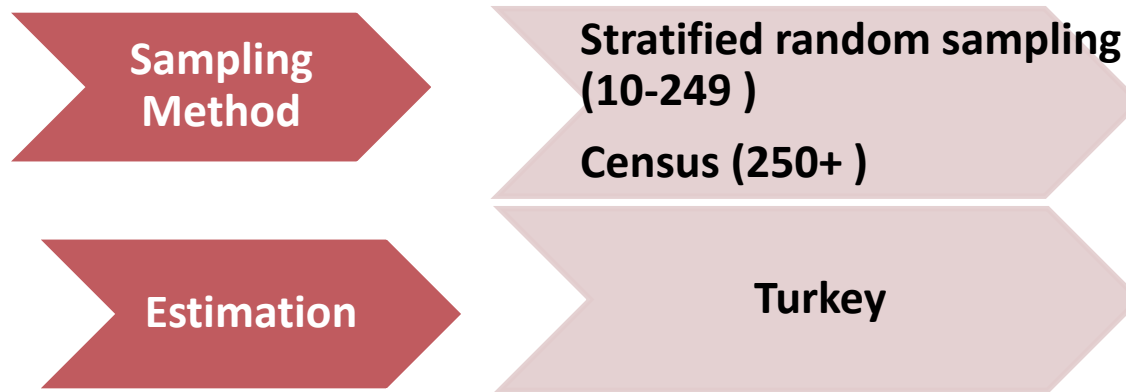
## Methodology – Classification

- NACE Rev. 2

### Statistical Classification of Economic Activities in the European Community



## Methodology – Sampling and Estimation



- Survey on ICT Usage in Enterprises indicates the estimation level of Turkey.

## Methodology - Statistical Unit

- The statistical unit is the enterprise.

**Enterprise** is the smallest combination of legal units that is an organizational unit producing goods or services, which benefits from a certain degree of autonomy in decision-making, especially for the allocation of its current resources. An enterprise carries out one or more activities at one or more locations. An enterprise may be a sole legal unit.



## The observation variables collected are the following :

- ICT systems and their usage in enterprises,
- use of the Internet and other electronic networks by enterprises,
- e-commerce,
- e-business processes and organizational aspects,
- ICT competence in the enterprise and the need for ICT skills,
- barriers to the use of ICT, the Internet and other electronic networks, e-commerce and e-business processes,





## Survey Process

### Questionnaire

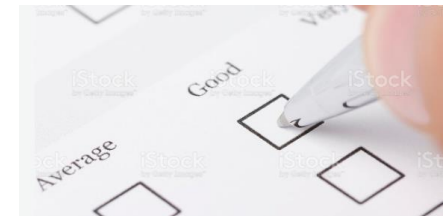


- The survey is developed by Eurostat annually in close collaboration with EU Member States and the OECD and is adapted to the changing needs of users and policy makers.
- The survey is based on model questionnaires and the accompanying methodological guidelines for their implementation.
- There is a Working Group on Information Society Statistics in Eurostat for the data collection for the Survey on ICT Usage in Enterprises.
- ISS WG works on a model questionnaire and methodological manual for this survey.

## Survey Process

### Questionnaire

- The contents of the model questionnaire (modules and questions) changes every year in order to measure the development in the usage of information and communication technologies.
- In order to correctly measure the use of technologies, it is necessary to adapt question to evolving needs. Special modules or group of questions may focus on a specific topic.
- Some questions are asked only on a biennial or triennial basis. For these reasons time series may be interrupted.



## Survey Process

### Questionnaire

- The methodological manual is prepared by ISS WG as a tool for helping NSIs to translate Eurostat model questionnaire into national languages and to implement the national survey following a harmonized methodology.
- While some questions must be asked in the questionnaire, others are optional. Countries can include additional questions.

## Survey Process

### Questionnaire

- The module questionnaire prepared by the ISS WG is translated into Turkish.
- Model questionnaire is adapted to the conditions in Turkey and also regulated in accordance with requirements of national institutions and also hold the National Information Society Strategy institutions/ organizations are organized in line with the needs.



## Survey Process

### Questionnaire

- There are mandatory and optional questions in the module questionnaire.
- It is decided that which of the optional questions should be asked according to institutional decisions.
- Draft questionnaire is formed considering national and international needs for pre-test.

| Module                                     | Description                     | Mandatory questions | Optional questions |
|--|---------------------------------|---------------------|--------------------|
| A  | Access and use of the internet  | 13                  | 2                  |
| B  | E-commerce                      | 9                   | 2                  |
| C  | Invoicing                       | 3                   | 1                  |
| D  | Use of cloud computing services | 8                   | 0                  |
| E  | Big data analysis               | 10                  | 10                 |
| F  | ICT specialists and skills      | 7                   | 4                  |
| G  | Internet of Things              | 0                   | 6                  |
| H  | Use of 3D printing technologies | 6                   | 0                  |
| I  | Use of robotics                 | 9                   | 0                  |
| X  | Background characteristics      | (3)                 | (0)                |
| <b>Total number of questions/responses</b> |                                 | <b>65(62)</b>       | <b>25</b>          |

## Survey Process

### Pre-test

- Draft questionnaire is forwarded to the Regional Offices for their opinions for the pretest study.
- Opinions and suggestions submitted by the Regional Offices are examined by our unit. Changes are made in the questionnaire by these opinions and suggestions.
- Final questionnaire is approved by the subject matter unit.





## Survey Process

### Data Entry Programme

- In order to keep pace with constantly evolving technology and globalization, reducing the cost of labor and time to a minimum level and producing data in a timely manner, TurkStat conducts all its surveys through survey portal.
- This portal platform ((DDI-based statistical production platform developed by TurkStat Information Technologies Experts) is a metadata driven software platform mainly depending on structural metadata and rule markup files.



# Survey Process

## Data Entry Programme

- DDI is used as a metadata editor for TurkStat Survey Portal. The Data Documentation Initiative (DDI) is an international standard for describing surveys, questionnaires, statistical data files.
- Rules are prepared together with DDI. Rules and DDI are sent to TurkStat Information Technologies Department for preparing survey portal on web.



## Survey Process

### Pilot

- It's fundamental to make one or more test before starting the survey.
  - Questions are formulated clearly
  - Filters are working
  - Questionnaire templates are displayed correctly on all devices
  - The questionnaire is available for respondents

## Survey Process

### Pilot

- The draft data entry programme is forwarded to the Regional Offices for their opinions for the pilot study.
- Opinions and suggestions submitted by the Regional Offices are examined by our unit. Changes are made in the questionnaire by these opinions and suggestions.
- Final data entry programme is approved by the subject matter units for creating web interviews. The data is compiled from enterprises through web-based electronic questionnaire.

## Survey Process

### Questionnaire Sections (2020)

- Access and use of the Internet
- E-commerce and EDI (Electronic Data Interchange)
- Use of cloud computing services
- Big data analysis
- ICT specialists and skills
- Use of 3D printing technologies
- Use of robotics



## Survey Process

### Questionnaire Sections (2020)

«Access and use of the Internet» module aims to measure:

- enterprises with access to the Internet
- number of employees with access to the Internet for business purposes for enterprises that have Internet
- enterprises with any type of fixed line connection to the Internet
- enterprises with a website
- various facilities of website for enterprises that have a website

## Survey Process

### Questionnaire Sections (2020)

«**E-commerce and EDI**» module aims to measure to e-commerce sales (received orders) which are conducted via web site or apps or as EDI (Electronic Data Interchange) type sales. The module of E-commerce and EDI is mainly focused on following variables:

- the value of web sales
- the percentage of the value of web sales by type of customer
- the place of web sales

## Survey Process

### Questionnaire Sections (2020)

The purpose of the module of «**Use of cloud computing services**» is to provide information on the use of a service model for the ICT provision e.g. software, computing power, storage capacity.

Cloud computing refers to ICT services that are used over the Internet to access software, computing power, storage capacity etc.

In this module;

- whether the enterprise uses cloud computing services
- which services used



## Survey Process

### Questionnaire Sections (2020)

The purpose of the module of «**Big data analysis**» is to collect information for enterprises that use big data analysis. In this module, it is mainly aimed to collect information on the following subjects:

- whether enterprises perform big data analysis
- data sources used to perform big data analysis
- the methods used to perform big data analysis

## Survey Process

### Questionnaire Sections (2020)

The purpose of the module of «**ICT specialists and skills**» is

- to measure if enterprises employ ICT specialist, and hence indirectly the incidence of ICT specialist skills
- to identify enterprises that provide professional ICT training to their persons employed either internally or using external trainers
- to identify mismatches or shortages of ICT specialists in the labour market, in case where the enterprise recruited or tried to recruit personnel for jobs requiring specific ICT specialist skills

## Survey Process

### Questionnaire Sections (2020)

The purpose of the questions of «**Use of 3D printing technologies**» is to provide information on

- enterprises which used 3D printing by itself
- enterprises which purchase a service of printing in 3D technology from an external service provider
- intended purposes of 3D printing technologies

## Survey Process

### Questionnaire Sections (2020)

The aim of «**Use of robotics**» is to measure the use of industrial and service robots by enterprises.

In this module, it is asked whether the enterprise uses industrial and service robots. If it uses robots, it is asked which purposes it uses.

## Survey Process

### Survey Portal

TurkStat Information Technologies Experts developed a Survey Portal which allows web-based data collection.

- Survey Portal is a single entry point platform for web-based data collection from respondents.
- Besides being a platform for statistical data provision from respondents, Survey Portal also includes supportive information for respondents related to how to use the platform.
- Survey Portal provides respondents to fill in electronic questionnaires by themselves in a comfortable and a safe manner.
- An effective technology covering all the statistical operations (business and social) and a basis which supports statistical production is aimed with this system.

# Survey Process

## Survey Portal – General Information



HARZEMLİ WEB


 ASLIHAN KABADAYI SEKTÖREL İSTATİSTİKLER DAİRE BAŞKANLIĞI ?

Girişimlerde Bilişim Teknolojileri Kullanım Araştırması Soru Formu, 2020

Kalan oturum süresi (saniye):1200

Standart Perspektif  Analiz Perspektifi

Yapılandırma  Seçenekler

|                          |                     |                      |     |                      |              |       |            |       |            |                      |  |                      |
|--------------------------|---------------------|----------------------|-----|----------------------|--------------|-------|------------|-------|------------|----------------------|--|----------------------|
| <input type="checkbox"/> | İstatistik birim no | <input type="text"/> | Yıl | <input type="text"/> | Anket Durumu | Hepsi | Cevaplılık | Hepsi | Bölge Kodu | <input type="text"/> | <input type="checkbox"/> Kendi Formlarım | <input type="text"/> |
|--------------------------|---------------------|----------------------|-----|----------------------|--------------|-------|------------|-------|------------|----------------------|--|----------------------|



### GENEL BİLGİLER

| Anket Bilgileri            |                      |                                     |
|----------------------------|----------------------|-------------------------------------|
| <u>İstatistik birim no</u> | <u>Yıl</u>           | <u>Soru Formu Cevaplılık Durumu</u> |
| <input type="text"/>       | <input type="text"/> | Seçiniz <input type="text"/>        |

**Araştırmanın Amacı:** Bilişim teknolojileri ile ilgili istatistikler, bilgi toplumunda son yıllarda meydana gelen gelişmeleri anlamak, bu konuda uygulanan politikaları takip etmek ve piyasaların etkin çalışmasını sağlamak gibi nedenlerle büyük önem kazanmıştır. Bu araştırma, girişimlerin bilgisayar, internet ve diğer bilişim teknolojileri kullanımları, teknolojik yeterlilik ve entegrasyonları hakkında bilgi derlemek amacıyla 2005 yılından itibaren yürütülmekte olup, girişimlerde söz konusu teknolojilerin kullanımı hakkında bilgi veren temel veri kaynağıdır.

**Kapsamı:** Bu soru formu sanayi ve hizmet sektöründe faaliyet gösteren girişimlerden örnekleme yöntemi ile seçilen girişimlere uygulanmaktadır.


**Yöntemi:** Bu soru formu yıllık olarak uygulanmakta olup, girişimler tarafından kullanıcı adı ve şifre kullanılarak İnternet üzerinden doldurulmaktadır.

**Gizlilik:** Bu bilgiler, sadece istatistiksel çalışmalarda kullanılmak amacıyla toplanmaktadır. Elde edilen bilgilerin gizliliği 5429 Sayılı Kanunun 13. ve 14. maddesi gereği teminat altına alınmıştır. Vereceğiniz bilgiler, idari, adli ve askeri hiçbir orqan, makam, merci veya kişiye verilemez, istatistik amacı dışında kullanılamaz ve ispat aracı olamaz.

# Survey Process

## Survey Portal- Respondent Information

### CEVAPLAYICI BİLGİLERİ

| Soru formuna cevap veren kişi bilgileri   |   |
|---|---|
| Ad Soyad  | deneme  |
| Görev   | <input type="radio"/> 11.Yöneticiler<br><input checked="" type="radio"/> 13.Muhasebe, mali müşavirlik<br><input type="radio"/> 15.Girişim/ işyeri sahibi<br><input type="radio"/> 16.Ortak<br><input type="radio"/> 1220.Bilgi işlem uzmanı, sorumlusu<br><input type="radio"/> 1219.Ar-Ge sorumlusu<br><input type="radio"/> 1222.İnsan kaynakları sorumlusu<br><input type="radio"/> 98.Diğer |
| Cevaplayıcının telefon numarası<br>(Lütfen başına sıfır koymadan 10 haneli olarak giriniz.) | 5236478891  |
| e_posta<br>(Lütfen e-posta adresinizi küçük harfler ile yazınız.)                           | g@g.com   |
| Formun cevaplanma tarihi  | 23.03.2020   |

# Survey Process

## Survey Portal – Questionnaire Section

### BİLİŞİM TEKNOLOJİLERİ KULLANIMI

#### Bölüm I - İnternet Erişimi ve Kullanımı

1.1 Girişiminizin İnternet erişimi var mı?

Evet  Hayır

#### Bölüm V - Bilişim (ICT/IT) Uzmanlığı

5.1 Girişiminiz bilişim (ICT/IT) uzmanı istihdam ediyor mu?

1.Evet  2.Hayır

5.2 Girişiminiz tarafından 2019 yılında çalışanlarınızın bilişim teknolojileri ile ilgili becerilerini geliştirmek için herhangi bir eğitim verildi mi?

2 - Diğer personel için  1.Evet  2.Hayır

5.3 Girişiminiz 2019 yılında bilişim (ICT/IT) uzmanı işe aldı mı veya almayı denedi mi?

1.Evet  2.Hayır

5.5 2019 yılında girişiminizde bilişim fonksiyonları kim ya da kimler tarafından gerçekleştirilmiştir? (örn. bilişim alt yapısının bakımı, ofis yazılımları için destek, işyönetim sistemleri ve yazılımlarının geliştirilmesi ve desteklenmesi, bilişim güvenliği ve veri koruma vb.)



# Survey Process

## Survey Portal – Respondent Burden

### CEVAPLAYICI YÜKÜ

8. Soru formunu doldurma süreci ile ilgili düşüncenizi zorluk ve harcanan zaman açısından belirtiniz?

|                    |                                |                                       |                              |  |                                   |
|--------------------|--------------------------------|---------------------------------------|------------------------------|--|-----------------------------------|
| 1.1 Zorluk         | <input type="radio"/> 1.Çok az | <input checked="" type="radio"/> 2.Az | <input type="radio"/> 3.Orta | <input type="radio"/> 4.Fazla            | <input type="radio"/> 5.Çok fazla |
| 1.2 Harcanan zaman | <input type="radio"/> 1.Çok az | <input type="radio"/> 2.Az            | <input type="radio"/> 3.Orta | <input checked="" type="radio"/> 4.Fazla | <input type="radio"/> 5.Çok fazla |

9. Soru formunu zaman alıcı ya da zor bulmanızın temel nedenleri nelerdir?  
(Birden fazla seçenek işaretleyebilirsiniz)

|  |                                     |
|--|-------------------------------------|
| 1. Bilgilerin farklı kaynaklardan toplanması                                     | <input checked="" type="checkbox"/> |
| 2. Soruların bazılarını cevaplamak için başkalarının yardımına ihtiyaç duyulması | <input type="checkbox"/>            |
| 3. Farklı zamanlarda elde edilen bilgiler için beklemek zorunda kalınması        | <input type="checkbox"/>            |
| 4. İstenilen bilgileri kayıtlardan elde etmekte zorluk yaşanması                 | <input type="checkbox"/>            |
| 5. Soru sayısının fazla olması   | <input type="checkbox"/>            |
| 6. Soruların net olmaması, açıklamaların yetersiz olması                         | <input type="checkbox"/>            |
| 7. Soruların uzun hesaplamalar gerektirmesi                                      | <input type="checkbox"/>            |
| 8. Diğer   | <input type="checkbox"/>            |

10. Soru formunun doldurulmasına ve gerekli bilgilerin toplanmasına siz dahil kaç kişi katkıda bulundu?

Kişi Sayısı

11. Soru formunun doldurulmasında ve gerekli bilgilerin toplanmasında siz dahil katkıda bulunan kişilerin harcadığı toplam süreyi belirtiniz.

(Soru formunu ve açıklamaları okuyup anlamak ve soru formunu doldurmak için gereken bilgileri toplayıp biraraya getirmek amacıyla bu işlere zaman ayıran kişilerin harcadığı toplam süre hesaplamaya dahil edilecektir.)

|                                |                                |                                  |
|--------------------------------|--------------------------------|----------------------------------|
| Saat                           | Dakika                         | Toplam harcanan süre             |
| <input type="text" value="2"/> | <input type="text" value="2"/> | <input type="text" value="122"/> |

## Survey Process

### Survey Portal – Respondent Burden

- Respondent burden
  - the starting and ending time of the survey  
(It is generated automatically by the software used for data collection)
- Perceptual respondent burden
  - the difficulty level of completing the questionnaire
  - actual time spent on collecting information
  - perceived difficulty and burden of survey design, procedure and instrument
  - number of people involved in completing the questionnaire

## Survey Process

### Framework

- Sampling frame is based on the registers of Business Registers System.
- Business Registers System for Turkey was established according to EU norms and Ministry of Treasury and Finance records is be the major administrative source.

## Survey Process

### Sample size

- The sampling size is determined by the Method Research Department at TurkStat according to scientific methods.
- The sample size is determined by considering the two breakdowns:
  - NACE and size class
- Sampling method is stratified random sampling for 10-49 and 50-249 size groups, while it is census for enterprises with 250+ persons employed.



## Survey Process

### Sample size

- For 2020, framework of the survey consists of 168 623 enterprises and sampling size of it was 12 787.

|                       |              | 2019    | 2020    |
|-----------------------|--------------|---------|---------|
| Framework             |              | 185 876 | 168 623 |
| Sampling              |              | 12 932  | 12 787  |
|                       | Response     | 12 678  | 12 553  |
|                       | Non-response | 254     | 234     |
| Non-response rate (%) |              | 1.96    | 1.82    |

## Target Respondent

- The data are compiled from the enterprises that selected by the sampling method.
- Information on sample enterprise is sent to Regional Offices.
- Regional Offices are responsible for coordinating, completing and controlling of the survey.

## Target Respondent

- The observation statistical unit is the enterprise. Some enterprises, especially the larger ones, are composed of several local units (establishment).
- Questionnaire is filled by main headquarter of enterprises as covering all local units of it.
- Questionnaire is filled by a decision maker with major responsibility for ICT-related issues in the enterprise (the ICT manager or a senior professional in the ICT department).
- In smaller enterprises, the respondent should be someone at the level of managing director or the owner. In any case the respondent should not be someone with responsibilities only in accounting.

## Survey Process

### Data Collection

- The data is compiled from enterprises via web-based electronic questionnaire. Data collection mode of this survey is Computer-Assisted Web Interviewing (CAWI) mode.
- Enterprises fill on-line the questionnaire using a web site dedicated to the survey; user name and password is assigned to each enterprises with mailed letter by TurkStat for the web-based electronic questionnaire.



## Survey Process

### Data Collection

- Invitation Letters / Leaflets
  - The info about the institution and the survey (What we do)
  - The legal basis of the work (Why we do)
  - The info about how to fulfill the questionnaire (How we do)
  - Confidentiality of Information (Confidence)
  - The deadline of the survey (When)
  - The contact numbers of the Regional Offices (Where)
  - Respondent Information Module link for further information
  - Username and the passwords required for the enterprises to enter data
  
- Short Message Services (SMS)
- Respondent Information Module

## Survey Process

### Field Application –Regional Offices



- TurkStat has its own survey portal which is a single entry point platform for statistical data collection from respondents.
- Regional Offices coordinate, complete and control the Survey on ICT Usage in Enterprises data through the web application of the survey portal.
- Interviewers at the Regional Offices provide the communication to explain the purpose of the survey, distribute the passwords required for the enterprises to enter data and complete the survey.
- Regional Offices check and analyze the data of enterprises under their responsibility through the survey portal.

## Survey Process

### Field Application–Central

- Deadline is determined in yearly statistical production calendar for all surveys and both central organization and Regional Offices have to obey this deadline.
  
- Central Data Collection Group which is established under the Data Collection Department is responsible to check Regional Offices work weekly during field application.
  - Starting/ ending date of the survey
  - Response rate
  
- Data obtained by Regional Offices is combined and analyzed by central office of TurkStat during the field application through survey portal.

## Survey Process

### Data Editing

- Survey Portal is also used for data cleaning and analysis of the survey at TurkStat. It can be used by Regional Offices and central unit.
- With the queries and controls in the data entry program, it is ensured that the respondent gives a consistent answer to all related questions.
- Sometimes an error may occur due to the data entry program. Therefore; data are also checked by Survey Portal in the following matters :
  - whether out of range response is chosen or not,
  - whether a missing value (if the respondent do not answer a question which need to be answered)
  - whether there is any inconsistency

## Survey Process

### Data Editing

#### 1. Automatic edit checks

- By the help of automatic edit checks in the data entry programme, it is provided that out of range answers are not accepted and/ or questions to be answered are not left blank during the field application.
- If the respondent do not answer a specific question, missing values are reported by our unit and transmitted to Regional Offices for control and re-inquiry.

## Survey Process

### Data Editing

#### 2. Filter questions

- Filter questions allow to skip one or more of the other questions. Filter questions are really useful both to avoid asking irrelevant questions and to address the respondent to a more specific answer.
- Whether the filtered questions are answered or not is checked. The questions that are not answered or left blank on the questionnaire are reported and sent to Regional Offices.

## Survey Process

### Data Editing

### 3. Consistency

- Inconsistencies are checked.
  - Enterprises with 250+ employees who do not have Internet access
  - Enterprises which are in the information and communication sector and who do not have Internet access, regardless of size group
  - Enterprises have Internet access in the previous year and do not have Internet access this year
  - Enterprises whose main activity is science and technology and which do not employ ICT / IT experts
  - Enterprises whose main activity is accommodation service and which do not have the opportunity to make a reservation on the website.

## Survey Process

### Analysis - Tools

- SAS
- Sql
- Oracle
- Ms Excel
- An in-house solution the so called «Pusula»



## Survey Process

### Analysis

- Survey Portal is used in the survey at TurkStat.
- Enterprises determined by the Survey Portal but not processed by the Regional Offices or lacking adequate explanation are detected.

### Micro analysis

- Queries are run and checked again on the subjects specified here:
  - Completeness
  - Non-response
  - Inconsistency ( For example: 2 or more steps change in Internet connection speed compared to the previous year results)

## Survey Process

### Macro analysis

- Data is analyzed the results by cross-tabulating sub-groups. In other words, the data is analyzed in terms of national level statistics and for subgroups as those defined by size and economic activity.
  - Comparison with previous year's data of the enterprises
  - Enterprises that not sell via the web even though the website of the enterprise has the ability to place online orders,
  - Attempts to sell over the web, even though they do not use the Internet.

## Survey Process

### Analysis - Macro analysis

- Trends and anomalies are examined for total and subgroups.
  - What are the most common responses to question X for this year and previous years?
  - What's different about this year?
  - What did respondents in size group X say for this year and previous years?
  
- All suspicious data determined is transmitted by our unit to the Regional Offices for control and re-inquiry.

## Survey Process

### Analysis

- It is added weights to the final data. Weighting coefficient used to calculate results, is a separate variable in micro data set. Each enterprise has its own weight. Variables weights is be used in order to reach total figures. Micro and macro analysis are made from weighted data.
- It is made and tabulated all queries from the analytical data.
- Time series tables are created.

## Survey Process

### Calculating

- The final statistics is mainly be proportions (e.g. the number of yes answers divided by the number of respondents who answered the question).

**The proportion of enterprises with Internet access was 94.9%.**

## Survey Process

### Dissemination - Press release and tables

- The first announcement of the results of the survey is made via press release in Turkish and English from TurkStat website.
- The first results of the survey are announced to the public in a press release approximately 3 months after the end of the field application.

PRESS RELEASE



**TURKİYE İSTATİSTİK KURUMU**

**TECHNICAL INFO:**  
AYHAN DOĞAN  
+90 312 454 75 87  
ayhan.dogan@tuik.gov.tr

**INFO REQUEST:**  
Data Dissemination Group  
+90 312 454 72 65  
bilgi@tuik.gov.tr

 /tuikbilgi | 
  /tuikbilgi

RELEASE DATE: 28 August 2020  
HOURS: 10:00  
NUMBER: 33677



**TS33677**

#### Use of Information and Communication Technology (ICT) by Enterprises, 2020

The proportion of enterprises with Internet access was 94.9%

According to the survey results, 94.9% of the enterprises having 10 or more employees used the Internet in 2020. Across all size classes, it was 94.2% for the enterprises with 10-49 employees, 97.8% for 50-249 employees and 99.4% for 250 and more employees.

## Survey Process

### Dissemination - Press release and tables

[https://data.tuik.gov.tr/Bulten/Index?p=Survey-on-Information-and-Communication-Technology-\(ICT\)-Usage-in-Enterprises-2020-33677](https://data.tuik.gov.tr/Bulten/Index?p=Survey-on-Information-and-Communication-Technology-(ICT)-Usage-in-Enterprises-2020-33677)

- The press release is explained together with the summary tables of the survey results and metadata.

#### Tables

Table-1 Proportion of enterprises with Internet access

Table-2 Proportion of enterprises with fixed broadband access

Table-3 Proportion of maximum contracted download speed of the fixed broadband user enterprises

Table-4 Enterprises having websites and facilities provided via web pages

Table-5 Proportion of enterprises that receiving orders for goods/services via web site or EDI-Type messages

Table-6 Platforms used for web sales of goods or services via websites or apps

Table-7 Proportion of the enterprises using cloud computing services

Table-8 Proportion of the enterprises using 3D printing

Table-9 Proportion of the enterprises using robotics

## Survey Process

### Dissemination - Press release and tables

- The proportion of enterprises with Internet access was 94.9%
- 92.5% of enterprises used fixed broadband connection
- 53.7% of enterprises had their own website
- Most preferred e-sales platform of enterprises was their own website or mobile application
- 40.8% of the enterprises with 250 or more employees used cloud computing services
- 3.1% of enterprises used 3D printing
- Proportion of the enterprises using robot technology was 5.1%




## Survey Process

### Dissemination – Statistical tables

- It is possible to reach detailed tables related to the statistics on ICT Usage in Enterprises from the TurkStat website.

<https://data.tuik.gov.tr/Kategori/GetKategori?p=bilgi-teknolojileri-ve-bilgi-toplumu-102&dil=2>



Science, Technology and Information Society

**64**

#### Sub Categories

- Survey on Information and Communication Technology (ICT) Usage in Households and by Individuals **21**
- Innovation Statistics **5**
- Survey on Information and Communication Technology (ICT) Usage in Enterprises **14**
- Research and Development Activities Survey **13**
- Careers Of Doctorate Holders Survey **1**
- Biotechnology Statistics **10**

**64** record found.

Press Release **2**

























Statistical Table **11**

Metadata **1**

Databases **0**

Display  records per page




























Search:

| Information and Communication Technology (ICT) Usage in Enterprises                 |  |                |   |
|---|--|----------------|---|
|   | Enterprises employing ICT/IT specialists by size group   | 28 August 2020 |     |
|  | Enterprises recruit or trying to recruit ICT/IT specialists and having difficulties to fill vacancies    | 28 August 2020 |   |
|  | Platforms receiving orders by enterprises for goods or services via websites or apps                     | 28 August 2020 |   |
|  | Enterprises which have internet access and use computer by economic activity (NACE Rev.2) and size group | 28 August 2020 |   |
|  | Enterprises which have website/home page by economic activity (NACE Rev.2) and size group                | 28 August 2020 |   |
|  | Proportion of enterprises using cloud computing services   | 28 August 2020 |   |
|  | Internet connection types of enterprises   | 28 August 2020 |   |
|  | Internet connection types of enterprises which have internet access                                      | 28 August 2020 |   |

## Survey Process

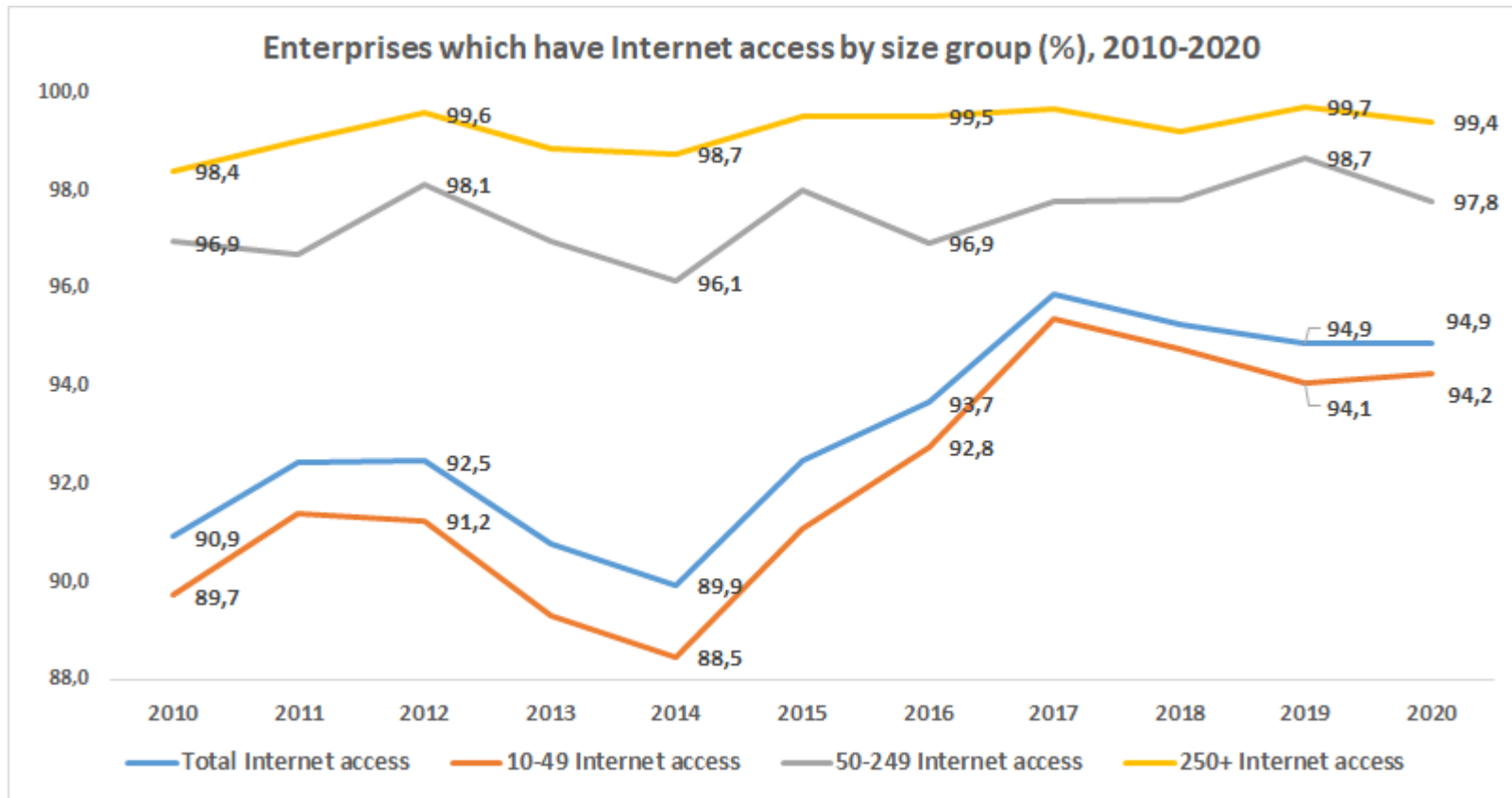
### Dissemination – Statistical tables

- Time series are available from 2005 onwards.

| Information and Communication Technology (ICT) Usage in Enterprises   |                |   |
|---|----------------|---|
|  Enterprises recruit or trying to recruit ICT/IT specialists and having difficulties to fill vacancies                                   | 28 August 2020 |       |
|  Proportion of enterprises using cloud computing services  | 28 August 2020 |       |
|  Enterprises that receive orders for products/services via website or EDI-Type Messages by economic activity (NACE Rev.2) and size group | 28 August 2020 |       |
|  Internet connection types of enterprises  | 28 August 2020 |       |
|  Internet connection types of enterprises which have internet access   | 28 August 2020 |       |
|  Enterprises which have website/home page by economic activity (NACE Rev.2) and size group   | 28 August 2020 |       |
|  Enterprises which have internet access and use computer by economic activity (NACE Rev.2) and size group                              | 28 August 2020 |   |
|  Platforms receiving orders by enterprises for goods or services via websites or apps  | 28 August 2020 |   |
|  Enterprises employing ICT/IT specialists by size group  | 28 August 2020 |   |

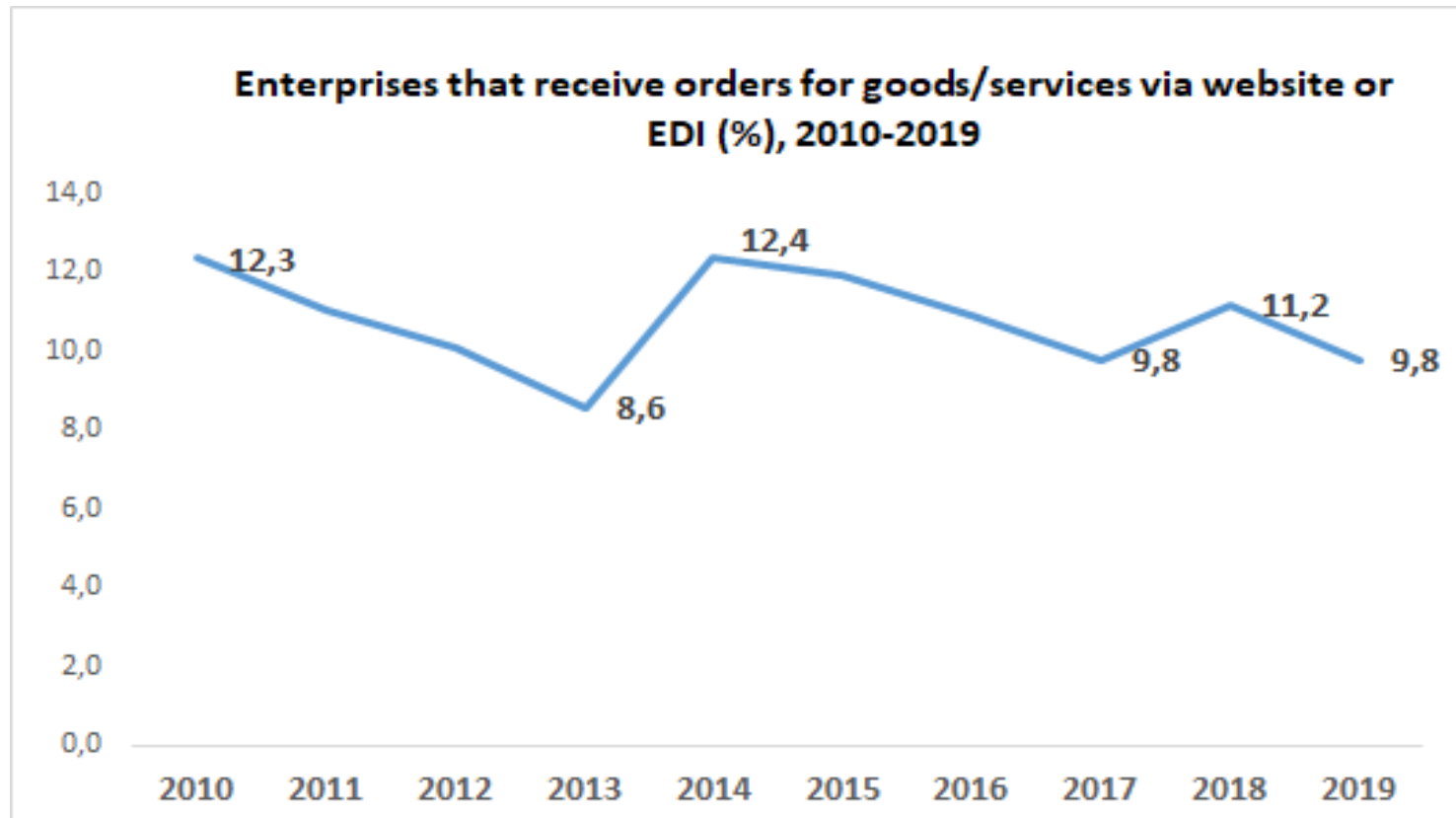
# Survey Process

## Dissemination – Statistical tables



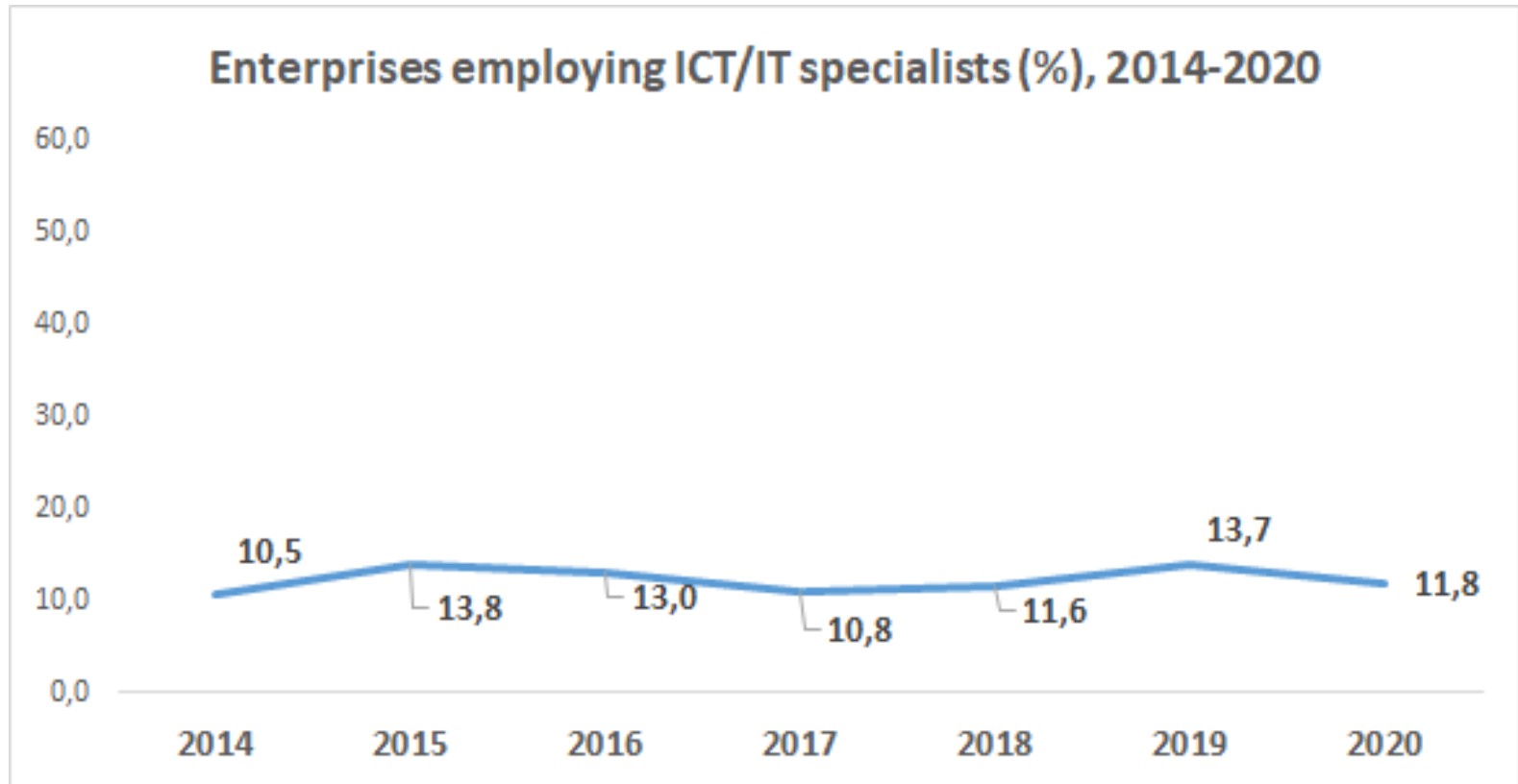
## Survey Process

### Dissemination – Statistical tables



## Survey Process

### Dissemination – Statistical tables



## Survey Process

### Dissemination – Micro data

- Data is transferred to corporate database.
- Privacy free data set and metadata is prepared and published for Research Data Center.

### Dissemination – Eurostat

- Data is transferred to Eurostat according to transmission format of Eurostat.

### Meeting Data Request

- **Internal stakeholders** (Digital Transformation Office of the Presidency, Presidency of Strategy and Budget, Ministry of Trade, Information and Communication Technologies Authority etc.)
- **External stakeholders** (Eurostat, OECD, SDGs, The International Telecommunication Union (ITU) etc.)

## Survey Process

### Institutional Quality Report

- A quality report is prepared to provide users with a tool for assessing the quality of the statistics which are based on the Survey on ICT Usage in Enterprises.
- It gives a brief description of the survey and a summary of the main quality indicators, which are: relevance, accuracy, accessibility and clarity, timeliness and punctuality, comparability, and coherence. The quality report is updated annually.

<https://turkstatweb.tuik.gov.tr/jsp/duyuru/upload/qualityreports/qualityreports.html>

*Any questions?...*

*[aslihan.kabadayi@tuik.gov.tr](mailto:aslihan.kabadayi@tuik.gov.tr)*



*Thank you...*