Women in Digital Index 2021

Methodological note

1 Introduction

The underrepresentation of women in the digital economy is a missed opportunity for Europe and is costing us dearly. We need robust and systematic measurement to know whether we are succeeding or failing in our efforts to bridge the persistent digital gender gap.

The Women in Digital (WiD) index brings together 12 relevant indicators to assess the performance of Member States in the areas of (1) Internet use, (2) Internet user skills as well as (3) Specialist skills and employment.

The index allows four main types of analysis:

- General performance assessment: to obtain a general characterisation of the performance of individual Member States by observing their overall index score and the scores of the main index dimensions.
- Zooming-in: to pinpoint the areas where Member State performance could be improved by analysing individual indicators.
- Follow-up: to assess whether there is progress over time.
- Comparative analysis: to compare countries in similar stages of digital development so as to flag the need for improvement in relevant policy areas.

2 Structure and indicators of the WiD index

Table 1. presents in detail the indicators of the WiD index including the exact definitions and data sources.

Table 1. WiD index, Dimension 1, Internet use

Indicator	Description	Breakdown	Unit	Source
1.1 Regular Internet use	People who use the Internet at least once a week	All People (aged 16-74)	% People	Eurostat - Community survey on ICT usage in Households and by Individuals (I_IUSE)
1.2 People who never used the internet	People who never used the Internet	All People (aged 16-74)	% People	Eurostat - Community survey on ICT usage in Households and by Individuals (I_IUX)
1.3 Online banking	People who used the Internet to use online banking	All People (aged 16-74)	% People who used Internet in the previous 3 months	Eurostat - Community survey on ICT usage in Households and by Individuals (I_IUBK)
1.4 Doing an online course	People who have used the Internet for doing an online course (on any subject)	All People (aged 16-74)	% People who used Internet in the previous 3 months	Eurostat - Community survey on ICT usage in Households and by Individuals (I_IUOLC)
1.5 Online consultations or voting	People who took part in on-line consultations or voting to define civic or political issues (e.g. urban planning, signing a petition)	All People (aged 16-74)	% People who used Internet in the previous 3 months	Eurostat - Community survey on ICT usage in Households and by Individuals (I_IUVOTE)
1.6 eGovernment users	People who sent filled forms to public authorities, over the internet, previous 12 months	All People (aged 16-74)	% Internet users who, during the previous year, needed to send filled forms to the public administration.	Eurostat - Community survey on ICT usage in Households and by Individuals (IGOV12RT)

Table 2. WiD index, Dimension 2, Internet user skills

Indicator	Description	Breakdown	Unit	Source
2.1 At least basic digital skills	People with "basic" or "above basic" digital skills in each of the following four dimensions: information, communication, problem solving and software for content creation (as measured by the number of activities carried out during the previous 3 months).	All People (aged 16-74)	% People	Eurostat - Community survey on ICT usage in Households and by Individuals
2.2 Above-basic digital skills	People with "above basic" digital skills in each of the following four dimensions: information, communication, problem solving and software for content creation (as measured by the number of activities carried out during the previous 3 months).	All People (aged 16-74)	% People	Eurostat - Community survey on ICT usage in Households and by Individuals
2.3 At least basic software skills	People who, in addition to having used basic software features such as word processing, have used advanced spreadsheet functions, created a presentation or document integrating text, pictures and tables or charts, or written code in a programming language.	All People (aged 16-74)	% People	Eurostat - Community survey on ICT usage in Households and by Individuals

Table 3. WiD index, Dimension 3, Specialist skills and employment

Indicator	Description	Breakdown	Unit	Source
3.1 STEM Graduates	People with a degree in a science, technology, maths or engineering-related subject	People aged 20-29	Graduates in STEM per 1000 individuals aged 20-29	Eurostat - the joint UIS (UNESCO Institute of Statistics)/OECD/Eurostat (UOE) questionnaires on education statistics
3.2 ICT Specialists	Employed ICT specialists. Broad definition based on the ISCO-08 classification and including jobs like ICT service managers, ICT professionals, ICT technicians, ICT installers and servicers.	People in employment aged 15-74	% People in employment aged 15-74	Eurostat - Labour force survey
3.3 Unadjusted gender pay gap	Gender pay gap in unadjusted form, measured as the difference between average gross hourly earnings of male paid employees and female paid employees as a percentage of average gross hourly earnings of male paid employees. The indicator has been defined as unadjusted, because it gives an overall picture of gender inequalities in terms of pay and measures a concept, which is broader than the concept of equal pay for equal work. All employees working in firms with ten or more employees, without restrictions for age and hours worked, are included.	Paid employees	% of average gross hourly earnings of men	Eurostat - Structure of Earnings Survey (SES)

3   Methodological considerations

3.1   Indicator Requirements

Indicators used in the Women in Digital (WiD) index comply with the following requirements:

- *Must be collected on a regular basis*, in order to fulfil their monitoring function (if not on a yearly basis, at least with a pre-defined regularity).
- *Must be accepted as relevant metrics* in their specific policy areas.
- *Must be collected in a consistent way* using the same methodology across the Member States.

3.2   Data updates and corrections

Updates and corrections are part of the lifecycle and nature of statistical data. It is typical that the values for one indicator suffer small amendments and only stabilise completely months or even years after the indicator was originally computed. This is the case with a number of indicators used in the WiD index.

At each publication, historical data will be reviewed to accommodate such changes. It is to be noted that the current report takes account of changes notified to the European Commission before 8 October 2021. Any modification made after this date will be included in the next report.

3.3   Normalisation

In order to aggregate indicators expressed in different units into dimensions of the WiD index, indicators have been normalised by using the *min-max* method, which consists of a linear projection of each indicator onto a scale between 0 and 1. For indicators with positive direction (i.e., where higher is better), the 0 value in the normalised scale was anchored to the minimum value in the original scale, and the value 1 in the normalised scale was anchored to the maximum value in the indicator's scale.

To allow for inter-temporal comparisons of index scores, the minima and maxima for the normalisation of each indicator are fixed over time. The choice of minima and maxima was performed carefully taking into account the likely evolution of each indicator and the balance between indicators. Table 4. presents the values that were chosen as the minimum and maximum of each indicator for normalisation purposes.

Table 4. Minima and Maxima used in indicator normalisation

Indicator	Unit	Min	Max
1.1 Regular Internet use	% People	40%	100%
1.2 People who never used the internet	% People	0%	50%
1.3 Online banking	% People who used Internet in the previous 3 months	0%	100%
1.4 Doing an online course	% People who used Internet in the previous 3 months	0%	35%
1.5 Online consultations or voting	% People who used Internet in the previous 3 months	0%	35%
1.6 eGovernment users	% Internet users who, during the previous year, needed to send filled forms to the public administration.	0%	100%
2.1 At least basic digital skills	% People	0%	100%
2.2 Above-basic digital skills	% People	0%	60%
2.3 At least basic software skills	% People	0%	100%
3.1 STEM Graduates	Graduates in STEM per 1000 individuals aged 20-29	0	25
3.2 ICT Specialists	% People in employment aged 15-74	0%	5%
3.3 Unadjusted gender pay gap	% of average gross hourly earnings of men	0%	40%

3.4   Imputation of missing observations

Some indicators presented missing observations for some countries. Values for those observations have been estimated. The estimated values have been considered when calculating the dimension scores and also the WiD index score.

As a general rule, missing observations have been estimated using data of previous or more recent years. When such data were not available, observations have been estimated based on alternative indicators that highly correlate with those with missing observations.

3.5   Weights

Equal weightings have been applied to each of the WiD index's three dimensions. All individual indicators within each dimension are also considered of equal importance and therefore weighted equally.

3.6   Method of Aggregation

In the WiD index, the aggregation of indicators into dimensions and the aggregation of dimensions into the overall index have been carried out by using simple weighted arithmetic averages of the normalised scores.