ITU EXPERT GROUP ON HOUSEHOLD INDICATORS (EGH)

BACKGROUND DOCUMENT 2

IMPROVING THE MEASUREMENT OF ICT SKILLS THROUGH HOUSEHOLDS SURVEYS[1]

SUMMARY

The 4th meeting of the Expert Group on ICT Household Indicators (EGH) held in 2016 discussed the need to enhance the measurement of ICT skills and how to measure the employment demand for ICT skills.

During the meeting, ITU presented an overview of the current data availability of indicator **HH15 - Individuals with ICT skills, by type of skills**, highlighting the importance of this indicator within the Sustainable Development Goals monitoring framework. Two initiatives related to this discussion were also introduced:

    I. work being conducted by OECD in assessing the intensity of ICT generic skills by occupation by linking employment data with information on people's use of ICTs at work; and

    II. new research being conducted by Professor Dr. Ellen Helsper from the London School of Economics (LSE) on how to accurately measure ICT skills.

The EGH meeting agreed that there are challenges with the measurement of ICT skills and that the current response categories for **HH15: Individuals with ICT skills, by type of skills** need to be reviewed to reflect ICT skills beyond computer-related skills.

Recent studies have highlighted the need to distinguish between different types of skills, e.g. operational skills, navigating skills, creative skills, safety skills, computational skills, social skills etc. This approach is slightly different from the current definition of HH15, which mainly measures operational or technical skills, e.g. installing software and copying and pasting within a document. Measuring a broader set of ICT skills would require information on individuals' technical and non-technical skills, e.g. social skills and comprehension of online behavior. For example, the combination of information provided by HH15 and information collected on Internet use through **HH9: Proportions of individuals using the Internet, by type of activity** would capture a broader set of ICT skills than HH15 alone.

Moreover, while some of the current response categories of HH15 can now be performed using a smartphone, e.g. sending emails with attachments and downloading and installing software (referring to apps), it is also important to consider skills which can be applied to many types of devices, e.g. to find information, edit pictures and video, communicating with friends and family and basic knowledge of security and how to behave online.

The meeting agreed to continue discussions in the EGH forum, taking into consideration the inputs discussed during the meeting and new research on how to measure ICT skills.

During 2017, three main topics related to ICT skills were discussed in the EGH online forum:

- <u>Measuring ICT skills</u>: revision of HH15 to reflect ICT skills beyond computer skills and how to aggregate response categories of HH9;

- <u>Aggregation of ICT skills categories</u>: discussion on methodology for an ICT skills score; and

- <u>Measuring ICT skills by occupation</u>: measuring use and intensity of ICT skills in employment.

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Comments received from the online forum: Brazil (Cetic.br), Kenya, Saudi Arabia, Uruguay (Agesic)

Preliminary conclusion:

- Measuring ICT skills is crucial for policy-making and to ensure people develop the right competencies required for employment and the jobs of the future.
- Improving the measurements of ICT skills is of high relevance for tracking progress of the attainment of the SDGs. ICT skills indicator HH15 is an agreed SDG indicator to measure target 4.4: *By 2030, substantially increase the number of youth and adults who have relevant skills, including technical and vocational skills, for employment, decent jobs and entrepreneurship*. For these reasons, it is crucial to agree on an updated indicator, taking into account new technologies and new uses of ICTs.
- The ICT skills indicator (HH15) currently includes nine response categories. However, while the response categories were initially ordered from relatively easy to more complex tasks, there was no discussion or proposal to find a standard method for aggregating this information into one ICT skills "score" to allow for cross-country comparison.
- The link between ICT skills and employment is crucial in order to assess the demand in the job market and ensure people develop the right competencies for employment and the jobs of the future. However, disaggregated data at the ISCO 1-digit level (10 major groups of occupations), and ISCO 2-digit level (43 sub-group occupations) is still a challenge for most countries.

Points for discussion:

- Countries and experts are encouraged to provide feedback on:

  (i)   The dimensions of ICT skills which need to be monitored, e.g. the EU Digital Competences Framework identifies five dimensions of ICT skills.

  (ii)   How the dimensions of ICT skills are best measured, e.g. through one single indicator or a combination of several indicators, e.g. HH9 and HH15.

  (iii)   The need to revise the response categories in HH9: Proportions of individuals using the Internet, by type of activity and HH15: Individuals with ICT skills, by type of skills, to ensure these indicators include the latest technologies, devices and new uses of ICTs;

  (iv)   The need to create new indicator(s) to measure specific types of ICT skills not covered in HH9 and HH15, e.g. privacy, security, online behaviour etc.; and

  (v)   How to aggregate response categories into one skill score for cross-country comparison.

Contents

I. Background: The growing importance of measuring ICT skills

In recent years, the focus of discussion on digital inclusion has moved from access inequalities to understanding differences in digital use and skills. Criticism of a more restricted vision of the digital divide sheds light on a second-level digital divide, which can also be identified among those who have overcome access barriers (VAN DIJK, 2005; DIMAGGIO et al, 2004). Moreover, digital literacy has become essential to ensure inclusion in the digital economy and effective participation in the information and knowledge society. As ICT has spread throughout all fields of our daily lives, it plays a crucial role in our work place, as the large majority of jobs require at least some basic form of ICT skills, and in our private lives for leisure and entertainment, communication and social interaction, civic and participatory engagement, health and wellbeing. According to OECD (2016), the increasing use of digital technologies in our daily lives is raising the demand for new skills. Therefore, participation in the digital economy requires that individuals develop relevant ICT skills and rapidly adjust to shifts in skills demands to use and adopt digital technology.

From this point of view, the sociodemographic characteristics of individuals, as well as motivational differences and different skills for using information and communication technologies (ICT), result in inequality of use even among those who have access to the Internet (VAN DIJK, 2005). This suggests that digital skills are among the main mediation factors capable of translating engagement in online activities into tangible results (VAN DEURSEN et al, 2016).

Identifying proper methods for measuring digital skills that go beyond computer-based skills is of great relevance for policymaking purposes. This would include measuring not only generic ICT skills, e.g. activities performed using computers, but also skills to use online applications on the Internet associated to information-processing, communication and collaboration, content creation, safety and privacy, problem-solving among other online activities.

From a methodological point of view, numerous efforts have been made to develop more sophisticated ways to measure skills that can provide further knowledge about which competencies really matter in allowing individuals to achieve greater well-being by using the Internet. There exists a consensus in the literature that measuring skills entails a complex process. Measurement efforts and methodological proposals can be summarized in three major methods as shown below:

- o **Assuming "use" and "activities performed online" as a proxy to skills**: This is a common method and works as a proxy to measure skills. This is the method used in the current HH15 and HH9 indicators. This method assumes that performing an activity means having skills in a specific area. It has the benefit of being collected using regular household surveys through structured questions such as "which of the following activities have you carried out…?" However, although "use" and "skills" are correlated, performing an activity does not necessarily mean the person has adequate skills to perform a specific task.
  This approach is commonly endorsed by official statistical offices (e.g. Eurostat Community Survey of ICT usage in Households and by Individuals). Although the relationship between use of the Internet and digital skills is not sufficiently documented, several countries collect activities-

based indicators as an adequate proxy, thus enabling a robust statistical basis for constructing a time series and allowing for international comparability for this type of indicator. Moreover, activities-based indicators are often based on dichotomous questions (i.e. 'Yes' or 'No' questions), whereas the absence of scales can reduce the burden of implementing this indicator across countries.

For more information on this method, please refer to the documents "Van Deursen Helsper and Eynon - Measuring Digital Skills.pdf" and pages 37-38 in "OECD - Adults Computers and Problem Solving.pdf", available at the EGH Online Forum.

o **Self-assessment to measure skills**: Similar to the approach where "use" means "skills", self-assessment method can be used to collected data through household surveys and it is based on the premise that performing online activities does not necessarily convert to digital skills. Although measures based on self-assessment of skills are a commonly employed method within surveys, they can possibly lead to some issues, such as overrating and underrating of skills and studies show that people often over-estimate their skills in self-assessments. Also, scales and response categories used for self-assessments might be culturally biased (e.g. challenge of translating scales to different languages, response items might be more or less desirable to report in different cultures, e.g. cultural/gender bias, etc).

For more information on this method, please refer to the document "ECDL Foundation - Perception and Reality - Measuring Digital Skills.pdf", available at the EGH Online Forum.

o **Direct assessment of skills through performance tests**: This is considered the most accurate measurement approach, although they are very costly and time-consuming for large-scale population-wide surveys. Hence this method is not necessarily possible using household surveys. Programme for the International Assessment of Adult Competencies (PIAAC) and Programme for International Student Assessment (PISA) being carried out by the Organisation for Economic Co-operation and Development (OECD) are good examples of initiatives based on the performance test approach.

For more information on this method, please refer to the documents "UNESCO - A global measure of digital and ICT literacy skills.pdf" and "OECD - Adults Computers and Problem Solving.pdf" available at the EGH Online Forum.

II.   Considerations for revising the existing indicators HH9 and HH15 in support of measuring ICT skills

Considering the challenges in developing internationally comparable measures of ICT skills, it is important to highlight that indicators to measure ICT skills should essentially cover a wide range of ICT skills from basic to advanced skills. Assuming "use" as a proxy for "skills", two current indicators defined by the ITU Manual for Measuring ICT Access and Use by Households and Individuals – HH9 and HH15 - are suitable to measure most relevant ICT skills identified in the literature as key ones for individuals to engage in the digital economy and have an effective participation in the information and knowledge societies (Refer to Annex B and C).

Revisions on the definitions and response categories of HH9 and HH15 should take into consideration the need to strengthen the link between both indicators, finding proper ways on how they can complement each other and together can be used to properly assess ICT skills.

Revising the response categories in HH9 and HH15 would require a lower amount of modification to the current measurement framework. However, it would require a discussion on whether these two indicators can capture all necessary dimensions of ICT skills or if there is a need to create new indicators to cover other dimensions of ICT skills, e.g. privacy, security, knowledge of how to behave online etc. An example of dimensions of ICT skills can be found in the principles set forth by the European Commission in the report "The Digital Competence Framework for Citizens" (EC, 2016), which identifies key components of digital competence in five areas (Please refer to Annex A).

It is important to keep in mind that respondent burden is of great concern in designing a survey questionnaire. As a result, a recommendation for a stand-alone ICT household survey regarding a proposal for measuring ICT skills should consider the limitations on what is feasible to be collected from a respondent through structured questionnaires across different contexts. It is important to highlight that data collection will have limitations, therefore data analysis is of paramount importance to a more comprehensive understanding of the indicator. Also, specific data needs such as proficiency or tangible outcomes achieved from individuals' ICT skills would probably become unachievable through data collection based on structured survey questionnaires, and alternative methods and data sources should be pursued.

A separate discussion is also necessary to explore possibilities of aggregating response categories into one ICT skills score, which can allow for cross-country comparisons. An example is the Digital Skills Indicator described in "Measuring Digital Skills across the EU: EU wide indicators of Digital Competence" prepared by the European Commission.

III.   Way forward and future work on HH9 and HH15

Considering that the indicator **HH15** in its current definition proposes a set of computer-related activities, and that **HH9** proposes a long list of activities undertaken by individuals using the Internet for private purposes (defined as non-work), **experts are invited to discuss the way forward on how to improve the measurement of ICT skills through household surveys, in particular relating to these two existing indicators**. Following issues should be discussed:

- The dimensions of ICT skills which are necessary to monitor, e.g. are there other important skills beyond the ones identified in the EU Digital Competences Framework?
- How are the dimensions of ICT skills best measured within household surveys, e.g. through one single indicator or a combination of several indicators, e.g. HH9 and HH15?
- The need to revise the response categories of HH15 to expand them to cover skills beyond computer-related skills and other areas of competences as indicated in the existing literature (Annex A);
- The need to revise the response categories of HH9 to expand/consolidate them to cover other areas of online competences as indicated in existing literature (Annex A);
- The need to develop new indicator(s) to cover issues such as privacy, security or other digital competencies not covered or related to existing indicators etc. (see Annex D); or e-waste avoiding to include all competencies in HH9 and HH15 alone.
- How to aggregate response categories into one skills score for cross-country comparison.

Countries and experts are also encouraged to highlight other indicators relating to ICT skills which could be further explored for future inclusion.

IV.   References

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Annex A: The European Commission in the report "The Digital Competence Framework for Citizens" (EC, 2016), which identifies key components of digital competence in five dimensions.

Dimensions and competences listed in the conceptual reference model for the Digital Competence Framework for Citizens.

Dimension 1: Information and data literacy

To articulate information needs, to locate and retrieve digital data, information and content. To judge the relevance of the source and its content. To store, manage, and organize digital data, information and content. Competences categories should include:

- Browsing, searching, filtering data, information and digital content;
- Evaluating data, information and digital content; and
- Managing data, information and digital content.

Dimension 2: Communication and collaboration

To interact, communicate and collaborate through digital technologies while being aware of cultural and generational diversity. To participate in society through public and private digital services and participatory citizenship. To manage one's digital identity and reputation. Competences categories should include:

- Interacting through digital technologies;
- Sharing through digital technologies;
- Engaging in citizenship through digital technologies;
- Collaborating through digital technologies;
- Netiquette: set of rules about behavior that is acceptable online; and
- Managing digital identity.

Dimension 3: Digital content creation

To create and edit digital content and to improve and integrate information and content into an existing body of knowledge while understanding how copyright and licenses are to be applied. To know how to give understandable instructions for a computer system. Competences categories should include:

- Developing digital content;
- Integrating and re-elaborating digital content;
- Copyright and licenses; and
- Programming.

Dimension 4: Safety

To protect devices, content, personal data and privacy in digital environments. To protect physical and psychological health, and to be aware of digital technologies for social well-being and social inclusion. To be aware of the environmental impact of digital technologies and their use. Competences categories should include:

- Protecting devices;
- Protecting personal data and privacy;
- Protecting health and well-being; and
- Protecting the environment.

Dimension 5: Problem solving

To identify needs and problems, and to resolve conceptual problems and problem situations in digital environments. To use digital tools to innovate processes and products. To keep up-to-date with the digital evolution. Competences categories should include:

- Solving technical problems;
- Identifying needs and technological responses;
- Creatively using digital technologies; and
- Identifying digital competence gaps.

Annex B: Current definition of the Indicator HH9: Proportion of individuals using the Internet, by type of activity (ITU – Manual for Measuring ICT Access and Use by Households and Individuals: 2014 Edition)

INDICATOR HH9: PROPORTION OF INDIVIDUALS USING THE INTERNET, BY TYPE OF ACTIVITY

Definitions:

This is the proportion of individuals who undertook one or more activities using the Internet for private (defined as non-work) purposes from any location in the last three months. Internet activities are defined as follows:

- Getting information about goods or services
- Seeking health information (on injury, disease, nutrition etc.).
- Making an appointment with a health practitioner via a website
- Getting information from general government organizations
- Interacting with general government organizations (downloading/requesting forms, completing/lodging forms online, making online payments and purchasing from government organizations etc.)
  General government organizations should be consistent with the SNA93 (2008 revision) concept of general government. According to the SNA "… the principal functions of government are to assume responsibility for the provision of goods and services to the community or to individual households and to finance their provision out of taxation or other incomes; to redistribute income and wealth by means of transfers; and to engage in non-market production." (General) government organizations include central, state and local government units.
- Sending or receiving e-mail
- Telephoning over the Internet/VoIP (using Skype, iTalk, etc.; includes video calls via webcam)
- Participating in social networks (creating user profile, posting messages or other contributions to Facebook, Twitter etc.)
- Accessing chat sites, blogs, newsgroups or online discussions
- Purchasing or ordering goods or services (purchase orders placed via the Internet whether or not payment was made online; excludes orders that were cancelled or not completed; includes purchasing of products such as music, travel and accommodation via the Internet)
- Selling goods or services (via eBay, Mercado libre, Facebook etc.)
- Using services related to travel or travel-related accommodation
- Internet banking (includes electronic transactions with a bank for payment, transfers, etc. or for looking up account information; excludes electronic transactions via the Internet for other types of financial services such as share purchases, financial services and insurance)
- Doing a formal online course (in any subject)
- Consulting wikis (Wikipedia etc.), online encyclopaedias or other websites for formal learning purposes
- Listening to web radio (either paid or free of charge)
- Watching web television (either paid or free of charge)
- Streaming or downloading images, movies, videos or music; playing or downloading games (either paid or free of charge)
- Downloading software or applications (includes patches and upgrades, either paid or free of charge)
- Reading or downloading online newspapers or magazines, electronic books (includes accessing news websites, either paid or free of charge; includes subscriptions to online news services)
- Looking for a job or sending/submitting a job application (includes searching specific web sites for a job; sending/submitting an application online)
- Participating in professional networks (professional networks are also seen in the broader context of social networking and have the same requirement of profile creation, contributing through messaging or chat, or uploading text or audio-visual content files; examples of professional or business networks are LinkedIn and Xing)

- Managing personal/own homepage
- Uploading self/user-created content to a website to be shared (text, images, photos, videos, music, software, etc.)
- Blogging: maintaining or adding contents to a blog
- Posting opinions on civic or political issues via websites (blogs, social networks, etc.) that may be created by any individual or organization
- Taking part in online consultations or voting to define civic or political issues (urban planning, signing a petition etc.)
- Using storage space on the Internet to save documents, pictures, music, video or other files (e.g. Google Drive, Dropbox, Windows Skydrive, iCloud, Amazon Cloud Drive)
- Using software run over the Internet for editing text documents, spreadsheets or presentations

Clarifications and methodological issues:

Note that these activities are restricted to private purposes and therefore exclude activities such as purchasing over the Internet undertaken as part of a person's job or teleworking.

Individuals should be asked about all Internet activities. The survey question used by countries should specify multiple responses and should not, for example, ask about the most frequent activities undertaken. Activities are not mutually exclusive, that is, there is overlap between some categories.

When collecting data on these activities, some of them may need rewording and examples provided according to the local context.

The suggested reference period is the last three months. Country practices vary, but ideally, reference periods should be aligned in order to obtain comparable data. Note that this represents a change since the last edition of this manual. Countries changing their reference period may wish to split the reference period in order to obtain comparable time series.

Individual is discussed in Chapter 7.

Countries may wish to extend activities to some non-private purposes, such as teleworking (working from one's home either as an employee or as a self-employed person).

Model question:

For which of the following activities did you use the Internet for private purposes (from any location) in the last three months?'

Respondents should select all activities (see above) that apply.

Countries may ask about activities as a series of yes/no questions, each referring to one activity.

Disaggregation and clarifications:

If data allow breakdown and disaggregation, the following can be considered:

- Breakdown by region, such as geographical areas, urban/ rural.
- Classification by sex.
- Classification by age: countries can use the following age groups for reporting on individuals' age: under 5; 5–9; 10–14; 15–24; 25–34; 35–44; 45–54; 55–64; 65–74 and 75 and over.
- Classification by highest education level attained: countries can use the ISCED 2011 classification for reporting on individuals' level of education: primary education or lower (ISCED 0,1); lower secondary education (ISCED 2); upper secondary or post-secondary non-tertiary education (ISCED 3, 4); tertiary education (ISCED 5, 6); and post-tertiary education (ISCED 7, 8).
- Classification by labour force status: countries can use the following categories for reporting on individuals' labour force status: employee; self-employed (includes employers, own account workers, members of producers' cooperatives and contributing family workers); workers not classifiable by status, unemployed;

and outside the labour force.

- Classification by occupation: countries should use the ISCO 2008 categories where these are in use (if not, use ISCO-88 per Table 4 earlier in this chapter) for reporting on individuals' occupation: managers; professionals; technicians and associate professionals; clerical support workers; service and sales workers; skilled agricultural, forestry and fishery workers; craft and related trades workers; plant and machine operators, and assemblers; elementary occupations; and armed forces occupations (noting that armed forces personnel may be out of scope).
- Other breakdowns or classifications, where relevant variables or questions are used in the questionnaire, such as individual income.

Calculation

The number of in-scope individuals using the Internet for a specific activity is calculated by aggregating the weighted responses for each activity (see Chapter 8).

Proportions are expressed as percentages and are calculated by dividing the number of in-scope individuals using the Internet for a specific activity by either the total number of in-scope individuals using the Internet (see HH7) or by the total number of in-scope individuals, and then multiplying the result by 100.

Examples:

The percentage of Internet users who undertook Internet banking is calculated as:
• HH9 %Internet users banking = [(number of in-scope individuals who used the Internet for banking) / (total number of in-scope individuals who used the Internet)]*100
The percentage of in-scope individuals using the Internet for Internet banking is calculated as:
• HH9 %Individuals banking = [(number of in-scope individuals who used the Internet for banking) / (total number of in-scope individuals)]*100

Policy relevance:

The indicator on the types of Internet activities undertaken by individuals is a key indicator in tracking the information society because it allows policy-makers, businesses and analysts to understand how Internet access is changing the way that people do business, learn, buy, communicate and interact with others, including governments.

This indicator is important for the formulation of policies since it is an indication of the demand for certain online services and applications. For example, it helps government organizations understand the demand for egovernment information and services. Questions on e-goods and services will help businesses and others understand the degree to which users are adopting e-commerce, etc.

HH9 also provides useful information on the sophistication of Internet use and the degree of ICT skills that Internet users have. Classificatory variables can provide further information on differences in the Internet activities undertaken by men/women, children/adults, employed/unemployed, etc. This information may be used, for instance, to design policies to promote e-commerce and extend e-government services to particular target groups, in order to ensure transition towards an inclusive information society.

Annex C: Current definition of the Indicator HH15: Individuals with ICT skills, by type of skills (ITU – Manual for Measuring ICT Access and Use by Households and Individuals: 2014 Edition)

INDICATOR HH15: INDIVIDUALS WITH ICT SKILLS, BY TYPE OF SKILLS

Definitions:

This refers to ICT skills, defined for the purpose of this indicator as having undertaken certain computer-related activities in the last three months.

- Computer-related activities to measure ICT skills are as follows:
- Copying or moving a file or folder
- Using copy and paste tools to duplicate or move information within a document
- Sending e-mails with attached files (e.g. document, picture, video)
- Using basic arithmetic formulae in a spreadsheet
- Connecting and installing new devices (e.g. a modem, camera, printer)
- Finding, downloading, installing and configuring software
- Creating electronic presentations with presentation software (including text, images, sound, video or
- charts)
- Transferring files between a computer and other devices
- Writing a computer program using a specialized programming language

Clarifications and methodological issues:

Individual is discussed in Chapter 7.

Most individuals will have carried out more than one activity and therefore multiple responses are expected.

The tasks are broadly ordered from less complex to more complex, although there is no requirement for a respondent to select simpler tasks before selecting a more complex task.

It may be possible to construct a metric based on the number of tasks individuals have performed. For example, Eurostat (2012) categorized individuals into low, medium and high levels of computer skills depending on how many tasks had been ticked (the level of difficulty of tasks is not taken into account). However, as at 2012, that categorization was under review.

Model question:

Which of the following computer-related activities have you carried out in the last three months?

Respondents should select all that apply (see above).

Some countries may ask about tasks as a series of yes/no questions.

This question is asked of individuals having used a computer in the last three months.

Disaggregation and clarifications:

If data allow breakdown and disaggregation, the following can be considered:

- Breakdown by region, such as geographical areas, urban/ rural.
- Classification by sex.
- Classification by age: countries can use the following age groups for reporting on individuals' age: under 5;

5–9; 10–14; 15–24; 25–34; 35–44; 45–54; 55–64; 65–74 and 75 and over.

- Classification by highest education level attained: countries can use the ISCED 2011 classification for reporting on individuals' level of education: primary education or lower (ISCED 0,1); lower secondary education (ISCED 2); upper secondary or post-secondary non-tertiary education (ISCED 3, 4); tertiary education (ISCED 5, 6); and post-tertiary education (ISCED 7, 8).

- Classification by labour force status: countries can use the following categories for reporting on individuals' labour force status: employee; self-employed (includes employers, own account workers, members of producers' cooperatives and contributing family workers); workers not classifiable by status, unemployed; and outside the labour force.

- Classification by occupation: countries should use the ISCO 2008 categories where these are in use (if not, use ISCO-88 per Table 4 earlier in this chapter) for reporting on individuals' occupation: managers; professionals; technicians and associate professionals; clerical support workers; service and sales workers; skilled agricultural, forestry and fishery workers; craft and related trades workers; plant and machine operators, and assemblers; elementary occupations; and armed forces occupations (noting that armed forces personnel may be out of scope).

- Other breakdowns or classifications, where relevant variables or questions are used in the questionnaire, such as individual income.

Calculation:

Indicator HH15 is calculated as the proportion of in-scope computer users (HH5) who have carried out each computer-related activity. The indicator is expressed as a percentage.

For instance, the percentage of individual computer users having copied or moved a file or folder can be calculated as:

• HH15copied or moved a file= [(number of in-scope individuals who copied or moved a folder or file) / (number of in-scope individuals who used a computer)]*100

Policy relevance:

ICT skills determine the effective use that is made of ICTs. The information from HH15 may therefore assist in making the link between ICT usage and impact. Currently, there is little data available for measuring ICT-specific skills, and hence researchers and policy-makers must rely on proxy indicators to measure this important enabler of ICT development.

HH15 is an appropriate way to measure and track the level of proficiency of computer users. This information could be used, for example, to adapt ICT literacy courses in schools, identify barriers to certain uses of computers as well as potential applications and services that could be accessed over the Internet. Classificatory variables can provide further information on the differences in ICT skills among men/women, children/adults, employed/unemployed, etc. These data may be used to inform targeted policies to improve ICT skills, and thus contribute to an inclusive information society.

Annex D: European Union Survey on ICT usage in households and by individuals: 2016 Eurostat Model Questionnaire

Module F: Privacy and protection of personal identity: The following questions concern the provision and protection of personal information in connection with activities carried out over the internet for any purpose, using websites or apps (excluding e-mail). Personal information refers to information which you consider private and would not necessarily disclose to the public, e.g. personal details (e.g. first name, family name, date of birth, identity card number), contact details (e.g. home address/where you live, phone number, e-mail) or payment details (e.g. credit card number) or other personal information (e.g. photos, current location).

F1.	What type of personal information did you provide over the internet in the last 12 months? *(tick all that apply or e)*	a) Personal details (e.g. name, date of birth, identity card number) b) Contact details (e.g. home address, phone number, e-mail) c) Payment details (e.g. credit or debit card number, bank account number) d) Other personal information (e.g. photos of you, current location) information related to health, employment, income) e) none, did not provide any personal information [-> go to F2]
F2.	Have you carried out any of the following to manage access to your personal information on the internet in the last 12 months? *(tick all that apply)*	a) Read privacy policy statements before providing personal information b) Restricted access to your geographical location c) Limited access to your profile or content on social networking sites d) Refused allowing the use of personal information for advertising purposes e) Checked that the website w here you needed to provide personal information was secure (e.g. https sites, safety logo or certificate) f) Asked websites or search engines to access the information they hold about you to update or delete it [-> go to F3]
F3.	Did you know that cookies can be used to trace movements of people on the Internet, to make a profile of each user and service them tailored ads? *(tick one)*	Yes No [-> go to F4]
F4.	How concerned are you with your online activities being recorded to provide you with tailored advertising? *(optional)* *(tick one)*	Very concerned Somewhat concerned Not concerned at all [-> go to F5]
F5.	Have you ever changed the settings in your internet browser to prevent or limit the amount of cookies put on your computer?	Yes No [-> go to F6]

	(tick one)	
F6.	**Do you use anti-tracking software (software that limits the ability to track your activities on the internet)?** *(tick one)*	Yes No [-> go to G1]