Report of the EGH subgroup on measuring artificial intelligence (AI) through household surveys

25 August 2025

Summary of recommendations

- Household surveys should be designed with a common concept of AI for consistency. The suggested conceptual definition, based on international and national sources is as follows:

  Artificial Intelligence (AI) refers to technologies that imitate logical reasoning, learning, planning and creativity. AI enables technical systems to perceive their environment, deal with the perceived information and solve problems to achieve a certain goal.

- Survey questions should refer specifically to the conscious use of AI – cases where respondents are aware they are using AI.
- Questions should reflect user needs – needs of policymakers and researchers – and focus on either specific activities where AI is used (e.g. using LLMs) or the domain of AI use (e.g., education) rather than a broad or abstract concept of AI. A detailed breakdown of use cases will support the calculation of an overall AI use indicator.
- Countries should prioritize developing new household survey indicators in the following areas: (1) Use of AI; (2) Awareness of AI; (3) Frequency of use; (4) Domain of use (e.g., education); (5) Use of AI by activity (e.g., using LLMs).
- Countries and other stakeholders should conduct cognitive testing of AI-related questions to evaluate respondent understanding and ensure data quality.

1. Introduction

The growing integration of AI technologies into daily life – from virtual assistants and recommendation algorithms to generative AI applications – has created a pressing need for data that capture how individuals engage with, benefit from, or are impacted by these technologies. Currently, household surveys rarely collect such data, leaving a significant gap in evidence for policy and research.

To address this, the ITU Expert Group on ICT Household Indicators (EGH) established a dedicated subgroup to explore how the use of AI could be measured through household surveys. The subgroup was created to assess the feasibility of capturing AI-related trends through official statistics through household surveys, and to ensure that any such measurement efforts are timely, internationally comparable, and policy-relevant.

This report summarizes the subgroup's deliberations, insights, and technical recommendations. The subgroup brought together statistical experts, policymakers, and technical practitioners from national statistical offices (NSOs), international

organizations, and academia. The work was conducted between March and July 2025 through a series of virtual meetings and collaborative drafting sessions.

2. Objectives

The primary objectives of the subgroup were to:

- Examine existing definitions and questions relevant to AI use in the context of individual and household-level data collection;
- Assess the feasibility and relevance of including AI use-related questions in ICT household surveys;
- Identify user needs and policy demands for data on AI use at the household and individual level;
- Develop preliminary recommendations and technical considerations to guide future measurement efforts.

3. Methods of work

The subgroup adopted a collaborative and iterative approach:

- Five virtual meetings were convened between March and July 2025.
- Feedback was collected through a subgroup survey and a collaborative MS Teams platform.
- Several subgroup members made presentations on their national experiences (see Annex for related questions in existing surveys).
- The subgroup conducted a review of existing measurement frameworks for AI use.
- Discussions focused on definitional clarity, conceptual framing, question formats, and emerging national practices.

4. Discussion

4.1. Definition of AI

Members reviewed existing definitions including the OECD's comprehensive definition[1] of "AI system". They agreed on the need for a consistent, technical definition that is relevant for household surveys and can be used by survey designers and enumerators. The final definition draws on Statistics Austria's adaptation of the EU Parliament definition, emphasizing key capabilities such as reasoning and perception.

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[1] *An AI system is a machine-based system that, for explicit or implicit objectives, infers, from the input it receives, how to generate outputs such as predictions, content, recommendations, or decisions that can influence physical or virtual environments. Different AI systems vary in their levels of autonomy and adaptiveness after deployment.*
https://www.oecd.org/en/publications/explanatory-memorandum-on-the-updated-oecd-definition-of-an-ai-system_623da898-en.html

Some members noted that overly technical terms might be confusing or misleading, especially in multilingual or low-literacy contexts. It was agreed that while the definition should be shared with questionnaire designers for context and enumerators for training (where possible), survey instruments themselves should avoid such language.

Recommendation

- Common conceptual definition of AI to be used in household survey design. This definition is based on existing international and national definitions (Statistics Austria adapted from EU):

> *Artificial Intelligence (AI) refers to technologies that imitate logical reasoning, learning, planning and creativity. AI enables technical systems to perceive their environment, deal with the perceived information and solve problems to achieve a certain goal.*

4.2. Scope of measurement of AI

Given that AI technologies are increasingly embedded in devices, software and digital platforms, the subgroup agreed that general AI use is difficult to measure meaningfully through direct questioning. Respondents may be unaware or unsure of whether they have used it in many cases.

As a result, members agreed that household surveys should focus on conscious use – situations where individuals are aware they are engaging with AI systems. This approach aligns with statistical feasibility and respondent clarity. However, it represents a natural limitation in the information on AI use that can be derived from household surveys.

Despite this limitation, the subgroup agreed based on their discussions with users and policymakers that information on conscious AI use is still an important input. Uptake of AI and emerging digital divides are measurable from such data and represent critical data points for developing policies around these new technologies. The subgroup also recognized the challenges in measuring AI use, awareness, or skills for individuals across diverse socioeconomic contexts. Simple and clear language is necessary to ensure a common understanding for respondents.

Recommendation

- Household survey questions on AI use should refer to the conscious use of AI – the case where a respondent was aware that they were using AI.
    - While AI is more and more seamlessly integrated into everyday life in some demographics, conscious use of AI remains an important indicator for informing policy on how individuals are purposefully implementing AI into their lives.

4.3. Presentation of questions on AI use

One of the most critical challenges identified by the subgroup relates to how questions on AI use should be formulated and presented in household surveys. Discussions across several meetings emphasized the need to strike a careful

balance between conceptual accuracy and respondent comprehension, especially given the technical and evolving nature of AI technologies.

Participants consistently noted that while it is important to capture meaningful and valid data on AI use, overly technical or abstract definitions can lead to confusion, misreporting, or high rates of item non-response. This was particularly relevant when considering diverse respondent profiles across countries, including variations in digital literacy, language, and socioeconomic context.

Experiences shared by members indicated that broad or abstract questions such as "Have you used AI?" are often ineffective. Respondents may not be sure what qualifies as AI, may underreport use due to lack of awareness, or may interpret the question differently depending on personal or cultural context.

In response to this, the subgroup emphasized the need to anchor questions in specific experiences. For example, asking whether someone has used a chatbot to get information, or used a tool that can generate text or images, can provide a clearer frame of reference. These references – which should also include examples – make the survey questions more relatable and increase the likelihood of accurate responses.

One of the key methodological debates within the subgroup centered on whether questions should be structured around domains of use (such as education, work, or healthcare) or around AI-driven activities (such as generating images, translating text or using virtual assistants).

- **Advantages of activity-based questions**: Activities are often more concrete and easier for respondents to recognize. However, they may require frequent updates as technologies evolve and new use cases emerge. This could pose challenges for maintaining comparability across countries and over time in household surveys.
- **Advantages of domain-based questions**: Domains – areas where AI technologies could be applied such as education or work – are more stable over time and align well with policy areas. However, respondents may not associate specific AI tools with these domains unless examples are provided – for instance, using AI for job searching or learning a language.

To address the risk of omitting relevant use cases, an open-ended question asking respondents about other AI uses that do not fit into the options provided could be used in early survey rounds. This would allow for exploratory analysis and could inform the refinement of standardized categories in subsequent survey waves.

Additionally, members recognized that survey mode (interviewer-administered vs. automated self-administered) would affect how much context could be provided to the respondent. This is especially important for automated surveys, which lack real-time clarification.

There was also strong consensus among the subgroup members on the need for **cognitive testing of all proposed question formats**. This testing should evaluate:

- How respondents understand the scope and meaning of "AI" as presented in the questions;
- How clearly they can recognize their own AI use experiences in the categories offered;
- Whether the response options are perceived as comprehensive and relevant;
- How awareness and comprehension vary by demographic group.

Recommendation

- Survey questions should focus on specific activities where AI is used or domains of AI use rather than an abstract general concept of AI use. This disaggregation of AI use should be as comprehensive as possible.
- More cognitive testing is needed before recommending a type of disaggregation of AI between domains (e.g., education, work) or activity (e.g., generating an image, translating text).

4.4. Priorities for question themes

The subgroup had in-depth discussions, consulted existing sets of questions on AI in household surveys (see Annex), and conducted an internal survey exercise to identify which themes and indicators should be prioritized when measuring AI through household surveys. The objective was to determine which areas are most critical for policymaking, international comparability, and respondent understanding, while recognizing that survey space is limited and questions must be concise and focused.

Subgroup members shared their preferences through a short questionnaire developed by ITU. The results revealed preferences for a core set of five indicators:

1. **Use of AI** – This theme received the strongest support and was universally regarded as the most fundamental measure for tracking AI adoption. It encompasses whether individuals have consciously used AI technologies or services within a defined timeframe. This could be through an individual seeking out AI technologies or being aware of AI technologies being added to platforms or applications that an individual is already using.
2. **Awareness of AI** – This was the next most commonly cited priority. Awareness was viewed as a prerequisite for interpreting responses on AI use, given that individuals may unknowingly use AI-powered tools (e.g., automated translation or recommendation systems).
3. **Frequency of use** – Measuring how often individuals use AI was considered important to capture intensity of engagement. Some members suggested that frequency measures could also serve as a proxy for well-being or digital dependency, recommending response categories such as “rare,” “frequent,” or “near-constant” use.
4. **Domain of use** – Understanding why individuals use AI was seen as critical for policy relevance. Key purposes discussed included education/learning, work

and productivity, healthcare, creative activities (e.g., generating content), and personal assistance.

5. **Activities** – Specific, tangible examples of AI applications (e.g., chatbots, generative text/image tools, voice assistants) were emphasized as necessary to ensure respondents can relate to the questions.

These five themes were broadly endorsed as the foundation for a first generation of AI indicators in household surveys.

One area of concern highlighted by some members was the **overlap between awareness and conscious use**. Awareness is a broader concept than conscious use – the types of AI awareness that policymakers and researchers are interested in beyond conscious use of AI should be clarified. When this is established questions should be carefully worded to avoid overlap between the two concepts. The group discussed the need to carefully structure awareness questions to avoid confusion and to ensure they complement (rather than duplicate) questions on conscious AI use.

In addition to the five prioritized themes, the subgroup also considered additional topics. These topics may also be useful to consider in the future but are currently either not of broad interest or underdeveloped conceptually:

- **Skills and Competencies**: Understanding users' ability to effectively interact with AI (e.g., refining prompts, evaluating outputs for accuracy) was suggested as a useful dimension. The method of evaluating AI competency is still likely to evolve.
- **Trust and Perceptions of AI**: Trust in AI outputs (related to accuracy and bias among others), concerns about privacy, and attitudes towards AI could be policy relevant.
- **Reasons for Non-Use**: Exploring barriers to AI adoption (e.g., lack of awareness, cost, perceived irrelevance, privacy concerns) or barriers to AI adoptions for specific activities.

<u>Recommendation</u>

- Countries should prioritize developing new indicators on AI in household surveys in the following areas: (1) Use of AI; (2) Awareness of AI; (3) Frequency of use; (4) Domain of use; (5) Use of AI by activity.

5. Future work

Subgroup members and other interested participants:

- **Conduct cognitive testing** of AI-related survey questions to evaluate respondent comprehension and data quality, with a focus on:
    - Understanding of questions related to the conscious use of AI;
    - Clarity around what respondents consider to be AI use in specific domains (e.g., education, transportation);

  Interpretation of specific AI activities (e.g., text generation, image creation).

Expert Group on Household Indicators (EGH):

- **Continue coordination between ITU and other international organizations** (e.g., OECD, Eurostat, UNSD) to ensure alignment and avoid duplication of efforts.
- **Promote engagement with policymakers and regulators** to ensure that AI indicators align with practical data needs.
- **Renew the subgroup on measuring AI use in 2026** with the aim to:
    - Continue collecting and comparing national experiences in measuring AI use through surveys (potentially via a public repository);
    - Propose question sets for further study in priority thematic areas, informed by cognitive testing results;
    - Assess the feasibility of integrating AI-related indicators into the core set of ICT household indicators.

Annex: Comparison of existing questions on AI use in household surveys

Theme	**Austria**[2]	**Brazil**[3]	**Canada**[4]	**Colombia**[5]	**Republic of Korea**[6]	**Slovenia**[7]	**UK**[8]	**Eurostat**[9]	**UNDP**[10]
Awareness	How would you rate your knowledge of artificial intelligence in general?		Knowledge of AI in general? Knowledge of noticeable impact from AI while using the Internet? Have you previously noticed AI in the following applications?		Which of the following areas do you know or have experience in services based on artificial intelligence technology? Please select all applicable items	Do you know about artificial intelligence technologies?	Have you ever heard of the term Artificial Intelligence (AI)?		
Interest	How interested are you in learning (more) about AI and its use?								
Use	Have you ever used artificial	In the last 3 months, have		During the last 12 months, for	Which of the following	Have you used tools,	In the past month, to	Have you used any	How often have you

[2] Statistics Austria survey on ICT usage in households and by individuals 2025 [national module on artificial intelligence]
[3] Cetic.br|NIC.br) ICT Households 2025
[4] Statistics Canada. 2022 Canadian Internet Use Survey
[5] ENTIC Hogares (DANE)
[6] 2023 Survey on Internet Usage, Ministry of Science and ICT, National Information Society Agency
[7] Statistics Slovenia survey on ICT usage in households and by individuals 2024
[8] 2023 Opinions and Lifestyle Survey from the Office for National Statistics
[9] EU Survey on the use of ICT in households and by individuals: 2025 Model Questionnaire
[10] United Nations Development Programme Survey on AI and Human Development from 2025 UNDP HDR report

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	intelligence tools to generate texts, images or other content, e.g. ChatGPT, DeepL, Microsoft Copilot or Google Bard?	you used artificial intelligence tools such as chatGPT, Copilot, Gemini, or WhatsApp's Meta AI?		which of the following services or activities did you use the Internet for: Use artificial intelligence tools (Productivity, Video, Marketing, Chatbot, Design, Writing)?	areas do you know or have experience in services based on artificial intelligence technology? Please select all applicable items	e.g. ChatGPT, Copilot, Gemini, LLaMA, Midjourney, DALL-E or generative AI tools in the last 3 months?	what extent have you chosen to use Artificial Intelligence (AI) in your day-to-day life? [A lot, a little, not at all] In the past month, have you used Artificial Intelligence (AI) chatbots?	generative AI tools (e.g. ChatGPT, Copilot, Gemini, LLaMA, Midjourney, DALL-E) to create content like text, images, programming code, or videos in the last 3 months?	used artificial intelligence tools such as ChatGPT, Google Gemini, Microsoft Copilot, etc., in the past 12 months?
Frequency	How often have you used these AI tools in the last 3 months?								How often have you used artificial intelligence tools such as ChatGPT, Google Gemini, Microsoft Copilot, etc., in the past 12 months?
Purpose	Have you used these AI tools for the following purposes?	And for what purpose have you used an artificial intelligence tool in the last 3 months?				What was the purpose of using generative AI tools in the last 3 months?	In the past month, what have you used Artificial Intelligence (AI) chatbots for?	What was the purpose of using generative AI tools in the last 3 months?	

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Activity	What have you used these generative AI tools for in the last 3 months?	In the last three months, have you used Artificial Intelligence platforms or tools such as ChatGPT, Copilot, Gemini, or WhatsApp's Meta AI to _____ (READ ITEM)?		Of the following options, for which activities did you use Artificial Intelligence tools	What is the detailed activity you experienced through the generative AI-based service (ChatGPT, Bard, DALL-E, ClipDrop, etc.) Select all applicable items				In the past 30 days, have you ever interacted with artificial intelligence, such as chatbots, in any of the following ways?
Reasons for using				What is the main reason you use Artificial Intelligence tools?					
Reasons not using	What are the reasons for never having used AI tools? What are the reasons for not using AI tools in the last 3 months?	And for what reasons have you not used an artificial intelligence tool in the last 3 months?		What is the main reason why you don't use Artificial Intelligence tools?		What is the main reason for not using generative AI tools in the last 3 months?		What is the main reason for not using generative AI tools in the last 3 months?	
Perceptions	How would you rate the increasing use of artificial intelligence in society? How useful		To what extent do you trust artificial intelligence technologies with your		What are your throughts about AI services? Please select the degree applicable to		Overall, what impact do you think Artificial Intelligence (AI) will have on the UK,		How much freedom of choice and control do you think you'll have in five years, as

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	could artificial intelligence be in your profession in general? How concerned are you that artificial intelligence could replace your job?		personal information?		each of the following items		where 0 is 'very negative impact' and 10 is 'very positive impact'?		digital technologies, including artificial intelligence, become more integrated into daily life? AI will increase your productivity at work Your current job will be significantly changed or replaced by AI AI will help you find new job roles that currently do not exist AI will increase your productivity at work