STATISTICS

DZ.7 Improving the visibility of AI in the national accounts

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What is AI? - Applications of AI

- Voice-controlled virtual assistants
  - Convert soundwaves to text, then determine action
    - Retrieve answers, make purchases, play music, deliver messages, etc.
  - Can be installed on speaker, display, headphones, watches, eyeglasses, etc.

- Autonomous vehicles
  - Gather real-time information about environment from sensors
  - Feed information into software that maps the route, adjusts to avoid obstacles, follows traffic laws, and triggers vehicle actions

- Decision-support / decision-making for businesses
  - Agriculture – which crops to grow, when to plant, pesticide usage
  - Health care – analyze diagnostic images
  - Finance – make lending decisions

Motivation for Guidance Note

- AI has the potential to replace high reasoning / decision making tasks traditionally undertaken by labor – making it an analytically important element for SNA/BPM users.

- Currently AI is not mentioned in
  - SNA 2008
  - BPM6
  - ISIC Rev.4
  - CPC 2.1

AI in National Accounts – Software, Databases, and AI

- AI systems share some common traits with software
  - Can be obtained by:
    - Development in-house as "own-account" IPP
    - Licensing systems developed by "publishers"
    - Customizing licensed systems, possibly with the assistance of IT consultants / systems integration service providers
    - Purchasing hardware that includes embedded systems

AI in National Accounts – "Own-Account" AI

- (SNA 10.111) - "Software developed in-house is valued at its estimated basic price, or at its costs of production if it is not possible to estimate the basic price."

- Question to consider: should <u>data</u> be included in costs of production for AI?
  - Training data for new AI
    - Used to develop AI's ability to recognize patterns and make inferences
    - If purchased explicitly for the purpose of developing the AI, should be included
    - Can value of open-source data used to train AI be estimated?
  - Continuous data streams for existing AI
    - Provides real-time information to help AI make contextually appropriate decisions
    - Seems more appropriately considered an intermediate input in operation of AI
    - If AI continues gaining intelligence, is production of AI continuous and indefinite?

AI in National Accounts – Classifications

- New CPC products for AI systems important for identifying production

- Need for new ISIC activity is less clear, as AI systems development does not appear to be primarily produced by firms that specialize in this activity
  - Much of AI is currently developed on own-account, by computer systems design / IT consultants, and by publishers of licensed software

- Updates of the International Standard Classification of Occupations may be beneficial in identifying changes in labor force that may be caused by AI

Key Recommendations in Endorsed Guidance Note (1)

1) Update SNA definition of Intellectual Property Products (2008 SNA 10.98) to:
   - The result of research, development, investigation, or innovation leading to knowledge *or the creation of intelligent systems* that the developers can market or use to their own benefit in production because use of the knowledge or system is restricted by means of legal or other protection.

2) The following definition of AI to be used in the updated SNA:
   - "AI is a computer program operating a system capable of recognition, reasoning, communication, and prediction simulating human recognition, reasoning, and communication"

3) Give AI explicit visibility within the asset classification by adding an "of which" category under Computer Software. This would permit countries to distinguish between AI and non-AI computer programs when analytically useful to do so.

Key Recommendations in Endorsed Guidance Note (2)

4) The value of the cost of producing training datasets should be excluded from the value of own-account AI and included instead in the value of Data assets.

5) The value of the cost of recurring data services required by an AI should be excluded from the value of AI and recorded as intermediate consumption.

6) The next CPC update should include specific groups, classes, and/or subclasses for AI

7) The next ISIC update should consider the need to clarify the classification for AI

Global Consultation Outcomes (1)

Question: Is this topic of relevance for your country?

- **33 of 48** respondents consider improving the visibility of AI in the national accounts as being of medium or high relevance

	High relevance	Medium relevance	Low relevance	Not relevant	No answer
EU	1	4	4	1	
Other Europe	1	3	2		
Americas	4	3	1	2	
Middle East and Near East	3	1	1		
Asia and Pacific	1	7	1	1	1
Africa	4	1		1	
TOTAL	**14**	**19**	**9**	**5**	**1**

Global Consultation Outcomes (2)

Question: Do you agree that the updated SNA include the following definition of AI: "AI is a computer program operating a system capable of recognition and reasoning consistent with human recognition and reasoning"?

- **40 of 48** respondents agree with this definition
- Some suggested improvements:
  - Modify the phrase "consistent with" to "simulating"
  - Add references to prediction and autonomy to make the more definition more precise.

Revised statistical definition of AI:

- "AI is a computer program operating a system capable of recognition, reasoning, **communication, and prediction simulating** human recognition, reasoning, **and communication**"

Global Consultation Outcomes (3)

Question: Do you agree that the updated CPC include specific classes for AI and that this guidance note serves as the SNA drafting recommendations?

- **42 of 48** respondents agree that separate CPC classes for AI should be established

Question: Do you agree that the updated ISIC should include no structural change for AI, or do you think that separate ISIC classes for AI should be established?

- **40 of 48** respondents agreed that separate ISIC categories for AI should <u>not be</u> established

Testing and Experimentation

- No explicit testing requirement

- Cognitive questionnaire testing may be advisable for countries that aim to produce data for AI as a detailed sub-category of software