

## **Session 8**

### Use of electronic data collection technologies: main drivers and decision-making process

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*“ The success of any electronic data collection depends on sound strategic, operational and managerial planning as well as a well-designed institutional environment. To ensure the success of the 2020 Census, it is critical to identify all requirements for introducing electronic data collection technology, and to develop plans for doing so early in the census life cycle. The planning should take into consideration several critical factors “*

- ❑ Overview of Data Collection Methods. There are three main Modes:
  1. Interview based
  2. Self-enumeration
  3. Administrative sources



Many institutions of statistics are interested in moving from surveys based on paper-and-pen interviewing (PAPI) to those based on computer-assisted personal interviewing (CAPI).

- ❑ There is no standard in CAPI software; different organizations use different software for their surveys;
- ❑ There are no large user communities for CAPI software;
- ❑ The Capi Software platform should emulate, enhance, and extend the PAPI data collection system;
- ❑ A simple but powerful interface for enumerators as easy; to use interface for the recording and correcting of answers; interactive prompts to check the consistency and accuracy of answers;
- ❑ A user friendly development environment for creating, modifying and updating digital survey instruments



Items	PAPI with Scan (2011)	CAPI
Instantaneous cross-validation with other records	Low	High
Automatic sequencing of question skips patterns	Low	High
Built-in consistency checks	-	High
Built-in instructional and help materials	Low	High
Rapid transmission of data to central servers	-	High
Rapid production of performance metrics of field operations; and cumulative report of enumerated units	Low	High
Ability to undertake quality assurance of geographic boundaries	Low	High
Switching between questionnaires in different languages	Low	High
Incompatibility between hardware and/or software	Possible	Possible
Solution failure (lack of connectivity, hardware failure, battery, GPS black spots, software bugs, device theft)	Applies to a certain extent	Applies to a certain extent
Lack of skills or knowledge by system users, particularly temporary census staff	Low	Higher
Hacking, online attack or others IC security issues	Lower	Higher



Items	PAPI with Scan (2011)	CAPI
Data receiving and storage space	Large space required for storage of questionnaires with long storage duration	Efficient – minimal space required
Access for transportation to deliver the forms or devices	Proved to be difficult in 2011	Devices can be easily distributed and collected
Physical security for storage	Not easy to manage, especially after data capture	Devices can be made traceable
Estimated time for data collection retrieval	1 month	Return of raw data to HQ is 1 week
Estimated time for first tabulations after data collection and scanning	7 months	2 month
Quality of the collected data (ceteris paribus)	Satisfactory	Good
Labour force requirements	Important phases of manual labour: packing, loading and unloading materials	More time spent on technical work



Moreover, since INSTAT adopted CSPro in the last years as the main system for developing CAPI applications, it is reasonable to use CSPro also for the CAPI data collection of the Census. With the CSPro solution, INSTAT is investing not only in a software solution, but also in increasing the capacity of its own personnel that will be using a standardized tool. These acquired skills and knowledge will be applicable in for surveys long after the 2020 Census

### **CSPro:**

1. Is public domain software package for entering, editing, tabulating and disseminating data.
2. Has the ability to register information about some aspect of the data collection such as a device status, each values entered in the field, time stamps, the GPS coordinates etc.
3. The CSPro can run on both Windows and Android devices
4. User friendly but powerful enough to handle the most complex applications



- ❑ Converting a paper questionnaire into an electronic format involves more than simply replicating it on the screen of a handheld device. The kind of device used fundamentally affects the way in which enumerators interact with the questionnaire. The wording and structure of some questions may need to be changed to make it easier for the enumerators to work quickly and accurately on the device.
- ❑ Furthermore, added features like data validation, edits, and preloaded modalities can be included in an electronic questionnaire. The specifications for these features must be written when developing the questionnaire, to program them into the software application. Below are a minimum set of specific features that the CAPI application of the 2020 Census should support.



- ❑ Need to adapt to the characteristics of device
  
- ❑ Take advantage of the features of e-questionnaire:
  1. Preload existing data
  2. Implement consistency checks
  3. Range checks, and edits
  4. Take GPS coordinates
  5. Offer on-screen help features



- Filtering questions and skip patterns
- Data validation
- Preloading the questionnaire with administrative data and geocodes
- Multiple language capabilities
- On-screen help
- Centralized post-coding compared to field coding

E-questionnaire can easily accommodate multi-option response categories by using drop-down menus or look-up tables.



- ❑ Developing strategic objectives
- ❑ Identifying key factors affecting decision
- ❑ Gathering information required for decision making
- ❑ Analysis of information
- ❑ Decision making
- ❑ Documenting decisions and evaluation



*How to set success criteria and rational for the adoption of new technology?*

1. Based on evaluation of previous census experience:
2. Improve census coverage and quality
3. Reducing costs
4. Disseminating census results more timely
5. Meeting public expectations



## **Context information:**

- Literacy rate
- Computer literacy rate
- Use of social media
- Proportion of population with internet access
- Mobile phone coverage(3G/4G)
- Does the law allows for a change in method of enumeration
- Public's reaction towards the use of electronic device/internet

## **Operational information:**

- Size of the population
- Area to be covered
- Accessibility(terrain/elevation,security, weather,etc)
- Enumeration duration
- Number of Enumeration Areas(EAs)
- Size of field force(enumerators,supervisors)
- Technology constraints(online/offline,bandwidth,power access)
- Possibility of outsourcing



## High level Management Group

Responsible  
for making the decision  
Consist of, managers,  
specialist IT,  
census methodology,  
field operation, mapping,  
procurement, budget

## Advisory Board

Responsible for reviewing  
the technology available  
(hardware and software),  
good practices,  
and market research  
for possible technological  
options and costs.

## Technical Working Groups

Responsible for undertaking  
detailed research for possible  
alternatives, evaluating the  
impacts of using new technology,  
testing, estimating costs,  
evaluating challenges/risks,  
making suggestions to high level  
management group



## **During the data collection phase:**

- ❑ It is essential for enumerators and supervisors to be able to see the enumeration status of each housing unit in real time,
- ❑ To ensure as complete an enumeration as possible,
- ❑ Supervisors should be able to control the quality of the work of enumerators and require them to revisit households for making any necessary corrections.

Management and monitoring systems provide tools for the field staff for the management of all activities during the enumeration phase.

- ❑ The availability of an efficient management and monitoring system is a key factor for successful field enumeration using an electronic data collection methodology such as CAPI.
- ❑ The information required for management and monitoring can be more easily collected and transmitted by management modules on handheld electronic devices.
- ❑ Performance indicators for the evaluation of the field enumeration can be generated from the data transmitted from the field in real time.



CAPI claims to enhance the quality of survey data:

- ✓ Routing problems within the questionnaire are eliminated
- ✓ Interviewers cannot miss questions or ask the wrong ones
- ✓ Questions are “customized” correctly
- ✓ Mathematical calculations are solved immediately
- ✓ Errors from separate data capture are eliminated



- I. Fundamental is understanding the purpose to which device it will be put and how the purpose fits into the overall census plan
- II. Understanding the system requirements will make the exact decision and the trade off between functionality and cost easier
- III. The budget is also a vital factor in making decisions about hardwares and software
- IV. Take the opportunity to reserarch and investigate other organizations experiences with similar systems
- V. Evaluation criteria need to be drawn up before the hardware is acquired for evalution



*The goal of the 2020 Census is to count everyone once,  
only once and in the right place.*

**THANK YOU FOR YOUR ATTENTION !**

***Based on: Albanian Population and Housing Census 2020  
Strategy and Planning Document***

