

Group 1: Main Requirements, Opportunities and Challenges for Adopting Handheld Electronic Devices

1. Technical Requirements

- a.** The technical requirements for adopting handheld electronic devices will vary from country to country as they differ in aspects such as internet and mobile generations, technological infrastructure etc. therefore the process should be fit for purpose and adapted to country specifications
- b.** The strategy for the collection of data using handheld electronic devices is an imperative equally an implementation plan as well as the cost effectiveness of the strategy should be carefully developed and analyzed
- c.** The handheld electronic devices Business Mapping Process (BMP) is an imperative aimed at establishing the flows and flaws of the various processes
- d.** The developed IT infrastructure should be properly linked to the statistical components in terms of codings, standards, classifications and methodologies
- e.** The handheld hardware devices should be adapted for data transmission, embedded GPS devices with high levels of accuracy, wider interface, multiple languages component, accepting a wide range of storage capabilities (flash, cloud, wireless, on and off line navigations etc.
- f.** The reusability of the soft and hardware are important therefore the interoperability of these components is important

2. Institutional/Organizational Requirements

- a. Institutional capacities in handling and adaptation to changes due to the introduction of mobile devices should be strategized
- b. The institutional infrastructure should be assessed as well as the technical architecture to support the use of handheld devices

3. Operational Requirements

- a. In the planning process a clear distinction has to be made between user and expert sensitivities and they should be a shift towards user sensitivity in the use of handheld mobile devices
- b. The functional environment of the devices should be considered and tested before usage. The devices should undergo stress tests under heat, wet conditions, pressure in terms of data storages etc.
- c. Data protection and security issues should be part of the strategy to use handheld devices
- d. The interoperability of the devices should be considered, easy to retrieve information, adjust, recover etc., data
- e. The various data validation protocols should be embedded into the questionnaires that are transferred into these devices but caution should be made on putting too much validation of the data as this may slow the data collection process
- f. Automatic or other methods of data transfers and verification by supervisors are important
- g. Quality Assurance Monitoring should be conducted at the various stages of the processes

3. Financial Requirements

- a. The cost effectiveness as well as the cost benefit analysis are the necessary requirements before embarking on the use of handheld devices
- b. In order to reduce cost hot spots for data downloading and transfer should be developed in the field
- c. Collaboration between institutions is required in order to reduce the cost of devices and share the used devices as technology changes rapidly and the devices may become obsolete soon after use
- d. A comparative analysis of the procurement process as well as out sourcing should be considered and the impact of the lag time on the entire census duly considered
- e. The countries financial rules, standards, procedures and operational standards procedures should be considered

4. Advantages of Handheld Devices

- a. Shorter data Capture Time
- b. Quicker results releases
- c. Cost
- d. Technological and mind change
- e. Front loading before enumeration, thereby eliminating paper works and certain data integrity checks
- f. The use of handheld devices brings forth skills building in the various stages

5. Major Challenges of using Handheld Devices

- a. Electronics indirectly introduces lengthy questionnaires with a lot of choices
- b. Internet and mobile services can be available but their quality may be bad resulting in delays for data collection and transfers, mismatch between the devices and databases
- c. Social impact of using mobile devices due to job losses as layouts may result
- d. Encrypt wireless services to avoid cyber-attacks and data theft
- e. Cost of backup storages
- f. Cost of protecting enumerators in crime zones against theft of devices and others
- g. Scale of the country in terms of the population size is a determinant to either use the paper or handheld device. The cost in smaller countries from experience is almost the same for paper and handheld devices, but as population increases the handheld device cost outweighs the paper cost.
- h. Measuring the device resistance through stress tests
- i. Determining the size and interface content of the device as well as checking the different transmission modes
- j. The specifications of the device should be clearly elaborated before the procurement starts

6. Multimode

- a. Duplications due to different data types
- b. Problem of data compatibility
- c. Difficulties in verifying self-enumerator
- d. Lengthy methodologies for the different modes
- e. The cost implication for multimode is high although multimode are subject to country specific challenges
- f. The methodology for calculating the cost compares between paper and mobile devices is an imperative to guide countries to the choices to make, therefore NSO assessment is important

7. Implications for Using Handheld Devices

- a. More time for adaptability for soft skills therefore more training is required
- b. Motivation of field workers aimed at increasing productivity
- c. Respondent burden
- d. Safety and response to disaster should be an integral part in the planning procedures to use handheld devices
- e. Performance incentives provided to workers should be based on the provision of quality data
- f. The final payment should be based on the return of the mobile device
- g. Spot checks for quality assurance should be introduced at all levels
- h. Confidentiality and security of the data should be ensured