

Mobile-based Monitoring Systems

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Introduction

Consortium projects in Bangladesh and Nepal are applying Smartphone-based technologies for survey and monitoring purposes. This technology adds value to the monitoring system as it systematically integrates all steps of data management (Fig 1) and yields a very rich information, e.g. geo-referenced data and multimedia information that provides a comprehensive view of the field situation.

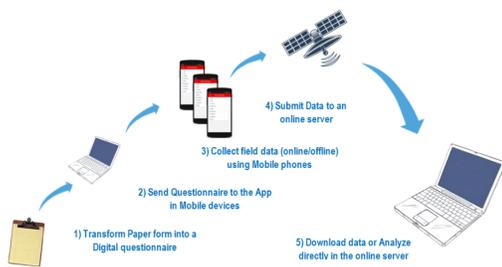


Fig 1: Steps of Mobile-based data collection

Success Stories

HELVETAS Nepal and Tdh-F Bangladesh used different mobile software and online platforms in implementing the Mobile-based Monitoring System.

HELVETAS Nepal



Fig 2: Collecting data with smartphones using the Akvo Flow app during a KAP (knowledge, attitude and behavior) survey

Akvo Flow: Akvo Flow is a multi-language tool for collecting, analyzing and displaying geographically referenced data using a simple Android smartphone app and an online dashboard, which enables to share information across the network.

Tdh-F, Bangladesh



Fig 3: Tdh – F, Collecting data with smart-phone using ODK app for a Hand Washing Station assessment

ODK: Open Data Kit (ODK) is a suite of tools that allows data collection using mobile devices without Internet connection and data submission to any online servers or ODK build ONA server.

ONA: ONA is built on ODK tools, an online data submission platform also allows to analyze and visualize data.

Requirements for system roll-out

- **Technical Expertise:** Knowledge of Microsoft Excel and Unicode languages for ODK, setting up survey questionnaires using Akvo dashboard, online data handling, and using Android operating smartphones
- **Smartphones:** Android mobile phones with assisted GPS/A-GPS technologies can cost around 100 USD each.
- **Internet connection:** Data can be collected offline but downloading questionnaires on mobile phones or sending data requires internet connection.
- **Enumerator training:** A two days training is sufficient if the surveyors are experienced in using smart phones.

Learning/Opportunities

- Replace the conventional labor-intensive methods of paper based survey, data entry and analysis
- One-time investment in electronic devices reduces repetitive survey costs
- "Anytime and Anywhere" – instantaneous data access allows a higher degree of transparency and accountability
- No network coverage needed for data collection: use in remote places possible
- Allows to link maps, photos, data, graphics to a specific location for comprehensive analysis

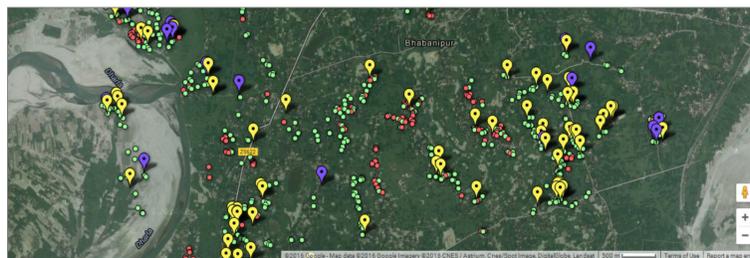


Fig 4: Overview of beneficiary HHs in Google map

- Facilitates informed decision-making in real-time, feedback and information exchange among stakeholders, which reduces response delays.
- Mobile phones are portable and easy to use, other devices such as GPS, camera, video recorder, paper, pen etc. are not needed
- Both ODK and Akvo Flow are open source tools
- WARM-P supported the local authorities to provide immediate support to improve handwashing based on the Mobile-based Monitoring results on WASH Behavior

Differences between the ODK and Akvo flow

- ODK is free to use limited sample up to 500 and useful for small surveys whereas Akvo flow is paid and can handle huge sample and data
- More technical expertise needed to use ODK than to use Akvo Flow

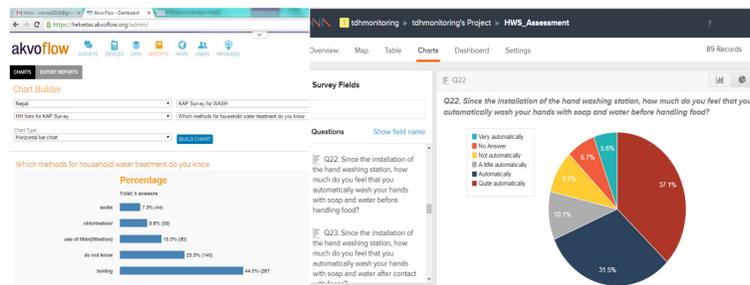


Fig 5: Data analysis frequency table in Akvo Flow dashboard and pie chart in ODK-ONA platform

- Akvo Flow Dashboard is user-friendly than in ODK.
- There is web form interface facility in ODK but not in Akvo Flow.

Challenges

- Mobile-based Monitoring is more appropriate for surveys with closed-ended rather than with open-ended questions
- Using small-screen mobile devices may occasionally lead to wrong data entry
- Tracking of GPS data is time consuming and not always accurate
- Charging batteries in rural areas is often a challenge, therefore a fully charged extra battery should be carried
- A good internet connection is required to use the dashboard

Future Improvements

- Capacities for using the Akvo/ODK apps and the dashboard need to be strengthened (Fig 6)
- Enumerators with sound competencies (Fig 2 & 3) need to be mobilized to get more accurate field data



Fig 6: Training of Enumerators on how to use the Akvo app

Scaling up

This technology has a high potential for scaling up as it can be used for different purposes such as monitoring functionality of drinking water and sanitation schemes. This is of particular interest in a context where resources for data and database management and monitoring are limited.



Fig 7: Monitoring of a Hand washing Station

Conclusion

As everyone is using mobile phones and each new generation of mobile devices is more powerful (processor speed, storage capacity), their use becomes easier and more common.

Mobile-based Monitoring is assessed as more efficient and also more effective for knowledge management than other methods. It is very useful periodically monitor the projects over the time.

Further information:

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