ICT IN MONITORING AND EVALUATION

Over the past two decades, many new tools and methodologies for monitoring and evaluation have become available. Innovation has frequently been driven by advances in information and communications technology. New processes, tools and methodologies inspired by advances in technology have brought new opportunities, but also new challenges, for development agencies.

Over the past two decades, many new tools and methodologies for monitoring and evaluation (M&E) have become available. A few are genuinely new, whilst others are based on well-established research methodologies. Many, unfortunately, are simply old ideas re-packaged and re-labelled.

Where there has been genuine innovation, it has often been driven by advances in information and communications technology (ICT). New processes, tools and methodologies, inspired by advances in technology, have brought new opportunities, but also new challenges, for development agencies, including CSOs.

Tools supported by ICT

This section is primarily based on a paper called "Innovations in Monitoring and Evaluating Results", produced by the United Nations Development Programme (UNDP) in 2013. That paper describes the tools and methodologies in further detail, and points to further reading (see UNDP 2013).

Beneficiary feedback mechanisms (BFMs): BFMs are *"the systems and processes that give the recipients of aid the opportunity to comment, make suggestions, express gratitude or criticise the products, services or targeting of an aid project of which they may be recipients"* (Jump 2013 p10). Mechanisms used to encourage beneficiary feedback include suggestion boxes, group meetings or one-on-one interviews. Increasingly, BFM is being facilitated through texting and voicemail from mobile phones. In theory, this can make it much easier for different stakeholders to provide their views directly to project or programme staff.

Crowdsourcing: Crowdsourcing involves obtaining information from large groups of people, especially an online community. This can be done very quickly and easily nowadays using mobile phone technology or open source software platforms. Crowdsourcing is most useful for M&E when an organisation wants to produce rapid quantitative information. However, it can also be used when seeking to gain information on sensitive issues such as corruption, where a large amount of anonymous information may be required.

Data exhaust: Data exhaust refers to the passive use of data from people accessing digital services. Whenever people use mobile phones or access the internet they leave trails behind them, and these can sometimes be used for M&E purposes. For example, many organisations that run websites keep records showing who accesses these websites, when and how often. Another example could be the analysis of social media interactions, which might show an organisation how its campaign messages are being received.

Data visualisation: Data visualisation tools allow data to be represented graphically and interactively. Examples include interactive websites, infographs, data dashboards and maps. Within M&E, data visualisation can be used to help analyse trends and patterns. It can also increase the ability of a development agency to communicate information to institutional donors, supporters and partners.

Intelligent Infrastructure: Infrastructure such as roads, bridges and buildings can be equipped with remotely accessible electronic senses to provide information on access. The data can be used to determine how and when infrastructure or services are used. For example, intelligent infrastructure can be used to record how many people are entering hospitals or resource centres. In some cases intelligent infrastructure can support automatic monitoring leading to decision-making. For example, it is possible to design wells that self-report when they are broken.

Micro-narratives: Micro-narratives are short stories or testimonials recorded by different stakeholders. They are normally personal stories, generated through conversations, or through social-media sites. Pattern detection software can be used to translate the qualitative information into quantitative information. The use of micro-narratives can potentially allow development agencies to collect qualitative information from a very large number of citizens, yet still draw meaningful insights.

Mobile data collection: Mobile data collection (MDC) involves collecting structured information through mobile phones, tablets or Personal Digital Assistants (PDAs), using specially-designed software applications. MDC is often used to run surveys. MDC has many potential advantages over paper-based survey methods:

- it enables the collection of audio, photographic, video or geographic information;
- it can improve the accuracy of data collection, because software can be designed to guide question-making or identify inconsistencies;

- it means data collected during a survey can be processed immediately, and avoids the need for data to be entered twice – once on a paper sheet and once onto a centralised computer; and
- it allows for adaptations – to sampling design or to questionnaire design – to be made in real-time, when data starts to come in.

INTRAC has recently worked on two projects that support mobile data collection. One project in Rwanda uses clinically trialled sensors, capable of diagnosing certain eye disorders, which is being used to evaluate the coverage of a primary eye-care programme. Another project involves the use of mobile apps to administer literacy tests.

Real-time, simple reporting: This means producing frequent reports, including text, pictures, audio recordings and videos, which can be generated and delivered through computers or mobile devices. Real-time, simple reporting can reduce formal reporting requirements for project managers, and can make reports more interesting. The power to record the faces and voices of beneficiaries can also help bring reports to life. Real-time reporting means project managers can provide more frequent updates, which can theoretically enhance real-time decision-making as well. Sometimes beneficiaries can be encouraged to engage in real-time reporting, using social media to give status updates of projects.

Remote sensing: Remote sensors can be used to observe distant targets using information from satellites or other airborne devices. This can be useful when access to an area is limited because of physical or security issues. Potentially, remote sensing can be used during humanitarian disasters when some locations become completely isolated. Remote sensing can also be used to observe major, physical changes in fields of work such as deforestation, climate change and natural resources. INTRAC has seen examples of where remote sensing has been used to assess roof construction within villages, in order to examine changes in economic status (where tin roofs are an indication of wealth).

When to use ICT-based solutions

Civil society organisations (CSOs) have often been in the vanguard of organisations experimenting with new, ICT-supported solutions. However, organisations need to carefully consider when and where an innovation should be used. A recent UNDP project (UNDP 2013) has developed some criteria for guiding decisions on when to apply new innovations. These criteria can be summarised as follows.

- A key question is whether or not the innovation meets a clearly identified need. Just because something can be done does not mean it should be done. To be useful a new tool or methodology should meet a need that cannot not be met by more traditional or cheaper tools or methodologies.
- Another key issue is whether there is sufficient organisational capacity to understand, develop, implement and use the innovation. As far as ICT is concerned, this includes having (or being able to access) the expertise needed to understand what technology is available and practical, and what are the likely costs and benefits.
- A third important issue is whether there is willingness (or power) to change established M&E practice. This is especially important for innovations that encourage the real-time collection and analysis of data. The value of real-time data will only be seen if learning and decision-making mechanisms are adjusted accordingly.
- An obvious question is whether there are sufficient resources for initial investment. Many technological innovations save time and money in the long-run, but most require money and expertise to be devoted at the start.
- If the innovation involves the active participation of different stakeholders then a key issue is whether or not there is sufficient incentive. For example, it is technically possible for any development agency to set up an online survey, using a platform such as Survey Monkey. But if the response rates are low because people are not motivated to participate, results may be inconclusive or misleading.

Decisions on whether or how to use ICT-supported tools and methodologies are usually based on some form of cost-benefit assessment that weighs the potential benefits against the likely costs. If full costs and benefits are not known then one option is to trial new tools and methodologies in small pilot projects, before expanding further.

Opportunities and challenges

Each of the different tools and methodologies described earlier in this paper has their own particular strengths and weaknesses. In general, however, the opportunities offered by ICT-inspired innovations within M&E can be summarised in three areas.

- Firstly, many of the innovations (e.g. BFMs, crowdsourcing, data exhaust, mobile data collection, real-time simple reporting) present opportunities for real-time information to be generated and analysed throughout a project or programme cycle from planning through to evaluation. This contrasts with more traditional methods of M&E that tend to be focused around baselines, mid-term reviews and final evaluations. Potential benefits include more regular testing of theories of change and more regular adaptation of plans. (ibid)
- The second area concerns increased engagement of citizens. Methods such as BFMs, crowdsourcing and micro-narratives encourage the more active participation of different stakeholders, and can open up new communication channels between projects / programmes and their intended beneficiaries. Other methods (e.g. data exhaust, intelligent infrastructure, remote sensing) enable many more stakeholders to be considered, although in these cases data collection is

more extractive, and stakeholders are merely passive suppliers of data (ibid).

- Thirdly, some innovations can help improve the quality or consistency of data. This is done by building quality control into the tool or methodology (e.g. mobile data collection) or by enabling new methods of data collection that can be triangulated against data generated through more-established methods.

Some of the main common challenges are as follows.

- The nature of innovation means that new challenges will always emerge. Therefore, the first organisations to pilot or use new innovations need to learn quickly and pass this information on to others.
- Access to technology often follows existing inequalities, such as wealth, gender or geographic inequalities. Therefore, technology-based M&E may not reach the most marginalised. For example, through its involvement in a recent pilot project, INTRAC observed that increasing access to BFMs via Short Message Service (SMS) texting could potentially exclude the most marginalised women in the project, as only those literate enough to write an SMS, and wealthy enough to own a handset separately from their husbands, could engage.
- Participation is generally acknowledged as a good thing within M&E, although it has long been recognised that it can be difficult to manage. Vastly increasing participation through innovative tools and methodologies may also vastly increase expectations, and new processes and mechanisms may need to be put in place to ensure that participation does not merely become data extraction (Raftree 2012).
- Innovative methodologies such as BFMs, crowdsourcing and micro-narratives may also open up the potential for unwelcome or abusive opinions to be aired. Social monitoring sites are not always easy to handle, and organisations new to the field need to develop ways to handle unwanted or unwelcome contributions.
- Many established M&E methodologies require careful sampling to ensure that results or opinions reflect wider populations. There is a danger that the appeal of getting information from large numbers of respondents will overshadow the need to ensure that they are representative of the wider population. Big data does not necessarily mean good data.
- When describing the ideal 'learning' NGO, Britton (1998, p4) draws a distinction between:
    - *information:* the raw material of facts, opinions and ideas;
    - *knowledge:* systematically organised information which, by the processes of analysis, comparison, testing and generalising, can be used to answer complex questions; and
    - *wisdom:* uniting the facts and insights of knowledge with the fruits of experience in a way which can usefully guide action.

  Whilst many innovative methodologies generate a large amount of *information,* and some (e.g. data visualisation) can support enhanced *knowledge,* it is important to recognise that the ultimate aim is to enhance *wisdom*. It is therefore important to recognise and support the human capacities needed to translate information into knowledge and wisdom. ICT innovations can only take an organisation so far when it comes to data analysis.

Finally, there are new ethical issues that need to be addressed with new innovations. These are perhaps most important when dealing with issues around passive data collection, such as data exhaust and remote sensing, where it may not be feasible or practical for participants to give consent to their information being used.

Further reading and resources

The paper *Innovations in Monitoring and Evaluating Results* (see UNDP 2013) contains information on all the innovations covered in this paper in further detail. A useful summary of debates around mobile data collection can be found at the Better Evaluation website at http://betterevaluation.org/evaluation-options/mobile_data_collection. A paper on beneficiary feedback mechanisms, based on a literature review (see Jump 2013) also contains a chapter on the role of technology in BFMs.

Probably the best-known crowdsourcing platform in the social development sphere can be found at www.ushahidi.com

References

- Britton, B (1998). *The Learning NGO.* Occasional Papers Series no. 17. INTRAC, July 1998.
- Jump, L (2013). *Beneficiary Feedback Mechanisms: A literature review.* Development Initiatives, April 2013.
- Raftree, L. (2012). *12 Tips on Using ICTs for Social Monitoring and Accountability.*
- UNDP (2013). *Innovations in Monitoring & Evaluating Results*. United Nations Development Programme, November 2013.

Author(s):
Nigel Simister and Dan James

Contributor(s):
Vera Scholz

INTRAC is a not-for-profit organisation that builds the skills and knowledge of civil society organisations to be more effective in addressing poverty and inequality. Since 1992 INTRAC has provided specialist support in monitoring and evaluation, working with people to develop their own M&E approaches and tools, based on their needs. We encourage appropriate and practical M&E, based on understanding what works in different contexts.