

Village voice: towards inclusive information technologies

A decade ago it was dubbed the 'digital divide'. Now, the gap in information and communications technologies (ICTs) between North and South is gradually shrinking. The developing world accounts for two-thirds of total mobile phone subscriptions, and Africa has the world's fastest growing mobile phone market.¹ By gaining a toehold in affordable ICTs, the poor can access the knowledge and services they need, such as real-time market prices, to boost their livelihoods. But to be sustainable, technologies need to factor in social realities. These include how people already share knowledge, and adapt to introduced technologies: mobile phones, for instance, confer status but can eat into much-needed income. Many development agencies opt for technology-led solutions that fail to 'take'. Approaches that keep development concerns at their core and people as their central focus are key.

Policy pointers

- **Information and communications technologies (ICTs)** are on the rise in poor countries, but work best when tailored to community needs and ways of working
- **ICT projects for development** often fail, as they are designed as technology-led service provision rather than development-led, people-centred initiatives
- **ICTs are key strategic tools** for improving livelihoods and should be integrated into mainstream development thinking
- **Existing frameworks for understanding ICTs for development**, such as the ICT for Rural Livelihoods knowledge map, must be developed and shared more widely
- **New approaches such as social network analysis** can clarify how ICTs affect socio-cultural interactions.

Communications and development

From the Internet and mobile phones to TV and broadcast radio, the rise of information and communications technologies (ICTs) is often said to be creating a 'global village'. But as yet, this is a lopsided community. ICTs, in particular broadband Internet access, are still heavily concentrated in the North despite fast-growing use in rural Africa and in some emergent economies, such as Brazil and China. And when ICTs do arrive in the South, they may fail to deliver the benefits envisaged by development agencies.

So a 'digital divide' is still in place, but in some regions is left unbridged out of choice. Many marginalised groups perceive ICTs as irrelevant. This is partly down to a lack of capacity building, but the main issue is that most agencies fail to work with communities to tailor the services they introduce to local needs.

Development agencies use ICTs because they boost the reliability and availability of information, lower transaction costs and provide more transparent and participatory access to institutions and media. Innovative local strategies can create new information flows and business models, and facilitate access to credit. Through all this, ICTs are actually changing social interactions. One example is e-Choupal in India, an Internet-based market pricing and farming information service covering 40,000 villages. Through links to

microfinance schemes and circumvention of middlemen, e-Choupal is affecting traditional business structure. Small farmers are now more able to fund their own inputs and can sell their products directly to market at an increased profit.

Despite this, the poorest are often excluded from the opportunities ICTs bring because many development organisations fail to ensure ICTs are delivered so they are relevant to and sustainable through the community. Market pricing systems often fail to perform well when there is only one buyer and a single source of credit – such as when farmers build a relationship with a buyer-agent who also acts as their source of credit and broker.

In fact, donor-funded ICT projects often focus on technology supply without fostering demand. Pilot projects supply equipment and Internet access without building community outreach services that work in conjunction to build local capacity, content and acceptance. The success of a pilot project is often hard to replicate because it is based on simplistic indicators such as user numbers, and contextual factors such as translation of materials into local languages are not taken into account. So scaling projects up tends to be done blindly.

One highly criticised example is the rollout of Internet, phone and fax centres across Ghana, Tanzania, Uganda

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and other developing countries. Many local people have failed to connect with these centres, and lack understanding of what they are for as well as the skills to use them.

National government plans for ICTs tend to home in on projects that focus on infrastructure, such as international cable links and mobile mast networks, that offer affordable access. An example is competitive mobile network pricing through regulatory frameworks for telecoms providers. This has successfully reduced access costs in many cases, but has not addressed who is using the technologies and for what, as well as what services can be developed to increase the impacts of this usage on livelihoods.

Why does this happen? On evidence, many development agencies shy away from the challenge of understanding some of the benefits (or problems) ICTs can bring. Or they adopt the view that ICTs are a 'market exercise' better left to telecoms and software companies, as in the developed world.

Affordable, accessible technology is key for health, education and enterprise. But projects introducing ICTs to local communities need to pay active attention to the impact of that technology on that community's ways of interacting. This means looking beyond short-term project goals to longer-term development impacts.

If ICTs are not integrated into development thinking, their precise impact on local social interactions and culture will not be recognised, measured or demonstrated – and there will be no basis for building local capacity to use ICTs.

ICT4D: birth of a new field

About a decade ago, the term 'ICT4D' was coined to describe ICT solutions for socioeconomic development. ICT4D is now becoming an interdisciplinary field in its own right, covering areas ranging from Internet connectivity to digital content and rights. But as the field has evolved, often outside mainstream development initiatives, debates within it have focused primarily on ICTs as 'magic bullet' solutions – technical exercises where access is the prime concern and the importance of capacity building is underplayed.

A case in point was the 2005 World Summit on the Information Society (WSIS), which was widely criticised for its technocratic format and domination by national government telecoms ministers.²

Among a number of corporate examples, Microsoft's 'FlexGo' pay-as-you-go programme for PC owners has targeted people with 'unsteady income' across a number of developing countries. But in practice, the rollout of FlexGo has not been accompanied by a programme fostering community services that in

their turn build capacity and acceptance of the change.

Many recognise that mainstream development could play a part in reforming the ICT4D agenda by integrating ICTs with locally specific development processes and outcomes. Equally, the development community could learn from the profound influence on social structures that ICTs can have, along with the ethos of participation and empowerment that modern ICT tools encourage.

Mobiles to mashups: ICT4D in practice

Many poor urban and rural communities are improving their knowledge strategies and enhancing livelihoods with ICTs. These improvements may be purely income-based: market pricing systems conveyed via mobile phone texts, for instance, can give smallholders and fishermen access to real-time market prices. However, the Linking Local Learners initiative in Kenya, Tanzania and Uganda is an Internet farmers' network that allows them to connect with others in the supply chain while boosting business skills.

ICTs can also help in facilitating knowledge flows that in their turn benefit livelihoods. For example, in Uganda, the Busoga Rural Open Source and Development Initiative (BROSDI) has established 'on-demand' agricultural extension services delivered by mobile phone. Used with both knowledge fairs and participatory Q&A radio programmes, these combine new with old technologies and face-to-face group discussion. The mix has enabled them to reach a much wider audience and explore community interests and needs, such as the advantages of orange sweet potatoes over local varieties.

Groups such as the Arid Lands Information Network (ALIN) in East Africa and the MS Swaminathan Research Foundation in India take participatory knowledge networking to another level. The ALIN approach builds community trust by involving existing social networks and empowers communities to drive their own information needs. Local outreach volunteers – who both train and act as 'infomediaries' – are available, along with a wide range of ICT-based and traditional tools, including community radio and drama, focal groups, participatory video, PCs with Internet access, a cross-network online web portal, mobile text-message services and newsletters. ALIN communities have a strong, sustained interest in ICTs and the centres are looking to long-term sustainability, for instance through self-funding.

So-called 'social safety nets' are another way of using ICTs to boost livelihoods. Grameen Telecom in Bangladesh, one of the world's least 'wired' and poorest countries, is a telecoms network with a twist. Through its Village Phone programme, women in poor

communities buy phones³ using microcredit loans, and become community phone ‘operators’ running a needed service. Money transfers such as the M-PESA system in Kenya meanwhile enable anyone with access to a mobile phone to instantly send home money or receive credit from buyers – revolutionising finance in ways that suit the poor.

Combining different technology components to generate fresh solutions, known as ‘mashups’, is becoming commonplace as more and more free-to-use component tools emerge. Some local mashups have proven to be the most innovative. In early 2008, for instance, Kenyan blogger Ory Okolloh began posting emailed reports of human rights abuses during the post-general election troubles in her country. From the blog a mashup, Ushahidi (‘testimony’), emerged. With this crisis response tool, abuses could be monitored by people on the ground using a text messaging system – a technique known as ‘crowdsourcing’.

Ushahidi software, which is free and open source, was developed in Kenya by combining a mobile text message receiving system with a feed to a website containing a Google map of the country, where reports are plotted. This powerful and immediate form of crisis monitoring has already proved its worth during a media blackout, is a permanent time-indexed record of human rights abuse, and is also being used in the DR Congo and Zimbabwe – with vast potential for a range of advocacy and crowdsourced reporting.

Complex contexts: measuring what works

Meaningfully measuring the success of ICT projects remains a challenge, but a key one if the development community is to integrate ICTs into their ways of working.

First, how to define ‘success’ in the ICT context? A more nuanced set of monitoring and evaluating tools and frameworks must be developed for the task, to measure and replicate what works in a range of local contexts. To achieve this, the ICT4D community itself must begin to move away from seeing the poor as passive consumers towards recognising them as active producers and innovators.⁴

Sustainability and adaptability All too often ICT pilot projects use output-based indicators of success (such as number of subscribers), as these are usually the easiest to directly observe and measure. Less is done to measure what a particular technology intervention is being used for, who is using it, or how it is helping to build a more robust livelihood strategy. To better capture this it is useful to be explicit about the difference between output, outcome and development impact-based indicators.

Outcomes and development impacts involve not only information, but also money, skills, motivation,

confidence, trust and existing knowledge. These contextual factors are often ignored at the pilot stage. Predicting the effect of a particular ICT in a particular community is likely to demand complex analysis. As the technology itself may be highly complex, many development agencies opt for a standardised ‘solution’: delivery by specialised providers in the private sector. Inevitably, this usually fails in pilots and proves impossible to replicate, as it can’t be adapted to locally specific needs and contexts.

Ultimately, pilots succeed because locals embrace them and they are innovative, combining public, private and civil society involvement. Successful initiatives aim to become self-sustaining in the medium to long term by shifting reliance from donor money to a business- and demand-driven model. For instance, a useful business model for ensuring community knowledge centres are sustainable is to create a local wireless network as a way of spreading the costs of satellite-based Internet connection among businesses, schools and hospitals.

Social network analysis One promising way for development agencies to better understand the socio-cultural contexts of communities they work in is to analyse social network structures and provide a proxy for a ‘knowledge map’.

Within communities and across business relationships, these structures act as information distribution networks. They are a trusted source of new knowledge. Mapping them provides a guide for introducing ICTs in a socio-culturally sensitive way, as well as a template to better measure who uses the technologies and whether development benefits arise from it.

Practical techniques to perform the mapping have been pioneered by organisations such as the Consultative Group on International Agricultural Research (CGIAR). And there are a host of non-ICT workshop-based activities that can be used, such as the Net-map Toolbox,⁵ to make social network mapping accessible to development practitioners. This kind of mapping vividly demonstrates how important ‘infomediaries’ are in disseminating new knowledge,⁶ and gives insight on power relations that can be used in avoiding technocratic ICT deployments.

Other measurement methods – such as impact assessment frameworks, which assess what is needed to maximise the benefits of ICTs for development – are at the fledgling stage but could prove useful in advancing ICT4D in the coming decades.

Tomorrow’s e-communities

Policy choices taken now or in the near future will shape future societies. So a lack of action risks making the digital divide even wider, not to mention squandering the sustainable development opportunities that ICTs can offer. Integrating ICTs into development thinking

now could create significantly more robust and diverse livelihoods in the poorer countries that need them.

A major reason for lack of interest is the 'patchwork' nature of ICT4D, which so far has been dominated by a technology-led 'service provision' focus, rather than people's needs. Outcomes and development impacts need to be more robustly linked back to ICTs by developing a better understanding of appropriate monitoring indicators. Importantly, this involves focusing on tools and techniques that enhance the value of the socio-cultural context and build capacity for it to interact and grow harmoniously with promising new technologies.

It is time for the development sector to fully recognise ICTs are a key part of agency for the poorest – whether used directly or indirectly. This requires moving towards providing a broad political economy of developmental ICT, which demands a mixture of disciplines working together – and, above all, marginalised people driving their own agenda. Only then can ICTs facilitate the release of their capacities for innovation, for more visibility, and for the kind of entrepreneurship they need.^{7,8}

■ **BEN GARSIDE**

Notes

■ ¹ ITU. 2009. *Measuring the Information Society: The ICT Development Index*. See www.itu.int/ITU-D/ict/publications/idi/2009/index.html. ■ ² Mansell, R. 2006. *Ambitious Connections: Entitlements and responsibilities of global networking*. London: LSE Research Online. See <http://eprints.lse.ac.uk/archive/00000763>. ■ ³ Cohen, N. 2001. *What Works: Grameen Telecom's village phones*. Digital Dividend Business Case Study. WRI, Washington DC. See www.digitaldividend.org/pdf/grameen.pdf. ■ ⁴ Heeks, R. 2008. ICT4D 2.0: The next phase of applying ICT for international development. *Computer* 41(6): 26-33. ■ ⁵ Schiffer, E. 2007. *Net-map Toolbox: Influence mapping of social networks*. CGIAR/International Food Policy Research Institute. See <http://netmap.wordpress.com>. ■ ⁶ See, for example, Arevalo, D. 2007. Social networks for information and knowledge management. Knowledge Systems for Rural Areas. *GTZ Bulletin* 16: 22-26. GTZ, Eschborn. ■ ⁷ Thompson, M. 2008. ICT and development studies: towards development 2.0. *Journal of International Development*. 20(6): 821-835. ■ ⁸ Wilson, M. 2003. Understanding the international ICT and development discourse: assumptions and implications. See <http://link.wits.ac.za/journal/j0301-merridy-fin.pdf>.

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