Information and Communications Technologies and Development: Help or Hindrance?

Kamran Jebreili/Associated Press

Iraqi-Kurd Khamoo Haji, 52, listens to a radio as he and about 50 family members take shelter inside a cave yesterday about six miles south of Dohuk, in Kurdish-controlled northern Iraq. New York Times, 27 March 2003 website.

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Executive summary

Can information and communications technologies (ICT) make a valuable contribution to achieving development outcomes? If so, how can this best be done? The use of ICT to improve how goods are produced and services are delivered is a feature of everyday life in high income countries. The issue, in relation to developing countries, is not whether to use ICT. It is how best to use ICT to achieve development objectives, given the operating constraints that apply.

These operating constraints vary greatly from country to country. The challenge for the development community, both those designing/administering donor aid programs and those delivering them, is to work out appropriate uses of ICT to deliver more effective development outcomes.

Great but as yet unrealised potential of ICT in development

Modern information and communications technologies hold great potential for helping developing countries to overcome the tyranny of distance. They are able to do this by providing low cost and accessible means for many people to communicate easily. However, how best to do this is still an open question. The benefits of any new technology stem from how it is applied. Simple applications demonstrate only a small part of a complex technology's potential.

Working out how to use the new technology to respond to the needs of poor countries requires an understanding of two key factors. The first is a good appreciation of how the technology can be used in cost effective ways. The second is a good handle on what are the needs of the poor, particularly in relation to the social dimensions of poverty such as poor health, lack of voice, and lack of information.

A large number of pilot projects have demonstrated to varying degrees the value of using ICT for development. This paper draws on a database of 100 ICT based projects in developing countries and some in-depth evaluations to identify key lessons. These are distilled into two checklists of good practice.

Broad definition used

The paper uses a broad definition of ICT and distinguishes between the 'old' and 'new' forms of the available technologies. In a development context, older communication technologies such as newspapers, radio and TV offer considerable unrealised potential. The new technologies such as mobile phones and the Internet also have great potential to support the achievement of major development goals. These advantages include interactive forms of communication and low cost access to sources of lifesaving information.

Importance of 'old' information and communication technologies

Part I presents summary data on the use of ICT in the countries that are the major focus of the Australian Agency for International Development (AusAID). The importance of

the 'old' technologies in communication such as radio, television and newspapers is shown. Also highlighted is a strong association between per capita income and the use of the new ICT such as computers and access to the Internet.

Determinants of readiness for ICT

This association suggests that countries with low per capita income levels have limited capacity to adopt advanced forms of ICT. Low per capita income also tends to be associated with other barriers in a developing country to the take up of ICT. These barriers include high levels of adult illiteracy, large rural and sparsely distributed populations. Prior assessment of a country's capacity to use new or effective combinations of old and new technologies is an important part of working out how best to use ICT in development.

Two broad approaches identified

Part II suggests two approaches to the use of ICT in development - one where ICT is in the lead and the other where ICT plays a supporting role. The first focuses on ICT as a driver of the development process. The second focuses on the uses of ICT in a supplementary role in development projects. The ICT-led approach usually aims to provide the poor with opportunities to receive up-to-date information or achieve an enhanced ability to communicate with others. These ICT-led development projects such as Telecentres seek to promote economic growth through access to better opportunities to generate income as a means of poverty reduction. This approach, however, has often been promoted with high but often unfulfilled expectations.

In contrast, the second approach places the development objective to the fore and seeks to use ICT to support that objective. The role of ICT in supporting development goals explicitly tied to poverty reduction is explored. This is first done by spelling out an ten point checklist of what an ICT-supported poverty reduction approach might involve.

Barriers to take-up of ICT in developing countries

Part III discusses the barriers to the use of ICT in a development context and outlines reasons for the difficulties encountered. The barriers include not only the obvious such as lack of equipment, poor infrastructure and lack of the required skills. The barriers identified also refer to more hard-to-address issues as the constraints of gender roles, rigid managerial control over ICT access, and inhibitions about using a written form of communication. It was noted that 'socio-cultural issues have an important effect on ICT diffusion…particularly where there is a conflict between local culture and the cultural assumptions within ICT systems'.[1]

Reasons for the failure of ICT projects in developing countries are discussed in relation to three factors. These are: first, the gap between the original system design and the

[1] Kiraka, R; & Manning, K; 2002, 'Getting online: Australian international development agencies and ICT use', *Journal of International Development*, Vol 14, pp 84.

application and second, the importance of 'soft' political realities. Third, key player behind the deployment of ICT in developing countries is often the public sector which often has different operating assumptions to those of the private sector for which they were originally designed.

Key elements of good practice in ICT based projects

Part IV presents a 10 point checklist of what is suggested to be good practice in relation to ICT-based projects in developing countries. The good practice checklist highlights the importance of an explicit focus on a contemporary development issue. The utility of the checklist is illustrated by reference to the People First Network project in the Solomon Islands. Its utility is also demonstrated by applying it to an assessment of 100 ICT-driven projects.

Key components of a good practice guide to the design of ICT driven projects in developing countries		
1	Why?	Is the use of ICT-based project aimed clearly at achieving a specific poverty reduction goal?
2	Who?	Is there a clearly specified target group for poverty alleviation?
3	How?	Is the form of ICT to be deployed appropriate in terms of cost, support, maintenance and compatibility with existing information flows?
4	How?	Is the form of ICT to be deployed scalable to enable it to be replicated and expanded
5	How?	Are appropriate intermediaries being used?
6	How?	What scope is there for public private partnerships?
7	What?	Is the content transmitted by the ICT relevant to the audience and is it in a language easily understood by the target audience?
8	How long?	Is the project self-sustaining over what period?
9	How well?	What performance measurement, monitoring and evaluation processes are in place?
10	What risks?	Managing risk: 'What unexpected events or situations might arise?' and 'What should be done to manage these?'[2]

Testing the utility of the checklist

An analysis of the 100 projects shows that only two projects meet the first nine good practice criteria. This indicates that compliance with the checklist in its entirety will be demanding for most current ICT projects. Some 30 projects have poverty reduction as

[2] Ibid.

their direct objective such as seeking to achieve a specific millennium development goal. A fifth of the sample or 20 projects have both a poverty reduction objective such as a millennium development goal and an identifiable target group among the poor. The existence of only a minority of projects directed to poverty reduction suggests that there is considerable scope for most ICT projects to adopt a more explicit poverty alleviation focus.

Consistent with their best practice status, nearly two thirds of the projects listed (66) meet the third criterion of appropriate ICT deployment in terms of cost, support, maintenance and compatibility with existing information flows. Some 63 of the projects appear to be in a form that is scalable to enable them to be replicated and expanded beyond their pilot status.

In relation to the use of appropriate intermediaries, the evidence was more extensive, with 76 projects scoring positively. Some 35 projects are involved in public private partnerships, defined as a partnership with a private company or international development agency. Use of relevant content and language applied to 88 of the projects listed. Some 48 projects appeared to have evidence that they could be self sustaining.

However, only 23 projects provided information which showed that they had performance measures and evaluation processes in place. The existence of a risk management strategy was hard to assess as there is not enough information about the project's planning documentation. In cases where the project has an international funding agency as a partner, it was assumed that a risk management strategy would have been developed – this applied to 9 of the projects.

Some 36 of the projects relate to education, 13 relate to governance, three to law and justice, 9 to agriculture and rural development, 14 to health, 5 to infrastructure, 3 to the environment, and 2 to emergency assistance. Other categories for project activities include culture, urban business, NGO support and community development.

Steps to mainstream ICT in development

The final part of the paper reverses the focus and looks at the arguments in favour of a role for ICT in mainstream development projects. Integrating ICT into development can be a complex undertaking. It requires of project designers and development practitioners a strong strategic focus and management skills to work out how best to combine different elements of what can be a complex jigsaw. An innovative management approach is more important than the skills required to set up and maintain the technology.

Integrating ICT into a development project involves clarifying the development objectives the project is addressing, and where the best point of intervention is. This will involve identifying the information and communication requirements needed to meet the project's development objectives. Only then is it appropriate to identify the appropriate types of ICT and other technologies than can be used to meet these information and communication requirements.[3]

[3] Heeks, R; 2002, p 7.

A series of 11 steps are proposed as a guide to mainstreaming ICT into development projects.

	Key steps for integrating ICT into mainstream development projects
1	Define the project objective: In terms of poverty reduction, what aspect of poverty does the project address? For example, does the project address a specific indicator for a particular Millennium Development Goal?
2	Who are the poor to be targeted by this program? To what extent is it possible to identify the poor in terms of rural/urban location, region, gender, age, education attainment & health status?
3	What are the likely causes, as distinct from the effects, of the aspect of poverty the program is focusing on? Is it possible to rate the likely causes in order of importance? Is poor communication a cause of this aspect of poverty?
4	What types of interventions are most likely to be effective in breaking the causal linkages? Need to distinguish between direct, indirect and supporting interventions.
5	What are the information and communication needs of the targeted poor in relation to the project's objectives and how important are they to the success of the project?
6	What role can ICT and other media play in delivering the information and providing channels of two-way communication?
7	Is there an appropriate form of ICT which can be deployed in terms of cost, support, maintenance and compatibility with existing information flows?
8	Does an enabling environment exist for the ICT to provide the proposed support?
9	What measures can be devised to assess progress towards the poverty reduction objective?
10	Is there a methodology in place to assess how effective the proposed intervention is in achieving the operational objectives of the program
11	Managing risk 'What unexpected events or situations might arise?' and 'What should be done to manage these?'[4]

Attempt to provide a balanced view

The paper seeks to offer a critical review of the role of information and communication technologies in development. The intention of the author has been to offer a more balanced or realistic view as a counter to the often overly optimistic view of many of the proponents of ICT for development. This requires giving some emphasis to the barriers that exist to the widespread use of ICT in many countries as well as to reporting the shortcomings of current projects.

Nevertheless, it is important to note that the critical or realistic view should not be taken as a negative view of the potential of ICT in development. It is common for new technologies to go through an initial period of widely varying views about its potential, followed by a period of more balanced assessments of what they can or cannot do.

[4] Ibid.

Two cycles in the adoption of new technology

It has been recently suggested that new technologies, from steam and the railways to electricity and steel, have gone through two broad stages.[5] The first has been called the 'installation period' which is one of exploration, experimentation and exuberance about the potential of the new technology. The second stage has been called the 'deployment period'. The emphasis in this period is on bedding down the new technology into everyday processes: 'the emphasis is no longer on the raw technology but on how to make it easy to use, reliable and secure'[6].

The crucial time in this cycle is the turning point from the initial pilot or 'installation' stage to the diffusion of the new technology into all aspects of the production process including service delivery. The turning point requires major institutional change in terms of not only the regulatory framework. It is also requires change in the way that existing institutions involved in the production of goods or delivery of services go about their business. The skills required in the 'deployment' stage are less to do with the technical issues associated with finetuning a new technology and more to do with implementation through coordination and collaboration.

Facilitating the turning point

An EC meta-evaluation of European donor agencies' use of ICT in development has noted that the ICT-dimension of programs in governance, poverty etc, was often subject to the discretion of individual desk-officers.[7] This has meant that incorporating ICT into mainstream programs has been reliant on the individual desk officer's own understanding of the potential of ICT (or lack thereof). This piecemeal approach has led to a highly variable result, restricting opportunities to make good use of ICT in development. The overall effect was a disjointed approach to ICTD by the development organization overall because individual desk officers were unaware of each others' experiences in the use of ICT.

In any new set of institutional arrangements, champions can play a key role in smoothing the introduction of new ways of working. ICT champions are found in most ICT based projects, helping to adapt the new technology to the development context and facilitating organisational learning. There is obviously scope for ICT champions to pay the same role within donor agencies.

Another way to diffuse new perspectives in an organisational setting is to set up a 'community of practice.' This can be done through face-to-face meetings (such as 'brown bag' lunchtime seminars, for example). However, the obvious way to keep up

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[5] Perez, Carlota, 2002, *Technological revolutions and Financial Capital: the Dynamics of Bubbles and Golden Ages*. Edward Elgar, UK, cited in Siegele, L; 2003, 'Paradise lost: a survey of the IT Industry', *The Economist*, 10-16 May, p 3-4.

[6] Siegele, L; 2003, 'Paradise lost: a survey of the IT Industry', *The Economist*, 10-16 May, p 4.

[7] UNDP Evaluation Office, 2001, 'Information Communications Technology for Development', Essentials: Synthesis of Lessons Learned. No 5, September, Footnote 18.

regular contact is through an electronic discussion list. This can be used to share knowledge, experiences, and ideas amongst development practitioners and others.[8] The discussion list could be kept internal to the donor organisation or it could also be broaden to include practitioners in the field or researchers working on the same issues.

The challenge for the champions of ICT in development is to seek out and highlight the lessons of the initial pilot or 'installation' stage to achieve a turning point for progress to a more synergistic and mature 'deployment' stage. Regular, focused communication needs to be at the centre of any strategy to achieve the turning point.

[8] UNDP, 2001, ibid, p18.