

ICT for Human Development in the Third World: The Reality and the Myth

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ABSTRACT

There is no doubt that the biggest challenge the nations in the developing world have to face in the new millennium is to find successful solutions the problem of poverty, by improving the human development conditions. It is believed that Information and Communication Technologies (ICTs) can play a certain role in achieving this objective.

However, opinions vary in deciding the exact role the ICTs have to play. In one extreme, there is the optimistic school that believes ICT is a panacea for all woes. In the other extreme, this opinion is frequently challenged by the pessimistic school, which thinks ICTs are not the solutions to the 'real' problems the communities in these countries encounter. An interesting example can be the Chief Minister of an adjacent Indian state who questioned the activities of ICT savvy ex-Chief Minister of Andra Pradesh, Chandra Babu Naidu, by asking "Can computers give milk to even one poor farmer of Andra Pradesh?"

This paper, without going to both these extremes analyses the true role ICTs can (and cannot) play in alleviating poverty and improving the socio economic conditions, especially in rural areas and among urban poor communities in the developing countries. It talks not just on the capabilities of ICTs, but the limitations as well.

It will particularly focus on the following areas:

- *Use of ICTs form the livelihood approach; i.e. how far ICTs can help poor in their revenue making activities*

- *Effectiveness of the use of ICTs in micro-finance*
- *Using ICTs to fight the information dissymmetry in markets*
- *ICTs in community building and empowering the poor*

These areas will be illustrated by six different case studies taken from a developing country or a region.

Keywords: *ICT4D, Human Development, Developing nations, Third World*

1.0 INTRODUCTION

Not a single nation in the developing world can take the human development challenges lightly in the new millennium. It is imperative to decrease, if not eradicate, the numerous human deprivations that plague the developing world. Presently, of the 4.6 billion people in developing countries, more than 850 million are illiterate, nearly a billion lacks access to improved water sources, and 2.4 billion lack access to basic sanitation. Nearly 325 million boys and girls are out of school. And 11 million children under age five die each year from preventable causes - equivalent to more than 30,000 a day. Around 1.2 billion people live on less than USD 1 a day, and a further 2.8 billion on less than USD 2 a day. (UNDP, 2001)

Although the magnitude of these challenges appears frightening, human progress and the impressive gains in the developing world in the past thirty years, demonstrate the possibility of successfully addressing them. Revolutionary advances in technologies are changing the rate of growth of economies,

fostering productivity and the potential to reduce poverty, not just in the financial sense, but by bringing in broader socio economic transformations in every front, most importantly in the education and healthcare as well.

For example, a child born today can expect to live eight years longer than one born thirty years ago. Many more people can read and write. The adult literacy rates have increased from an estimated 47 % in 1970 to 73 % in 1999. The share of rural families with access to safe water has grown more than fivefold. Significantly more people can enjoy a decent standard of living, with average incomes in developing countries having almost doubled in real terms between 1975 and 1998, from USD 1,300 to USD 2,500 (UNDP, 2001) Extreme income poverty, measured as those living on less than USD 1 a day, has declined from 29 % of the developing world population in 1990 to 23 % in 1999. This puts the developing world, as a whole, closer to the objective of halving income poverty to around 14 % by 2015.

It is widely expected that Information and Communication Technologies (ICTs) can play a certain role in advancing the human development conditions, particularly in the developing countries. However, there are different opinions to what extent ICTs can be used in the process of increasing the human development conditions, in the communities in the developing countries.

In one extreme, there is an optimistic school that believes ICTs are magic answers for all the problems the developing nations face at present. This enthusiasm is somewhat similar to the one shared by the food scientists in the days of 'Green Revolution' in late 1960's. This is the school that has gone to the level of depicting the rural ICT penetration by a picture of a poor farmer, wearing shabby clothes, in the middle of paddy fields using the ultra modern PDA or a laptop. This kind of thinking is far from reality. Seeing ICTs as a kind of an

omnipotent tool that can address every problem the mankind undergo currently can lead to a damaging situation where even the investments will end with no significant results.

The other school consists of pessimists who believe ICTs are not the right tools that can address the 'real' problems in the developing communities.

What use can a computer be to someone earning less than a dollar a day? Can computers produce food to feed the hungry millions in the developing world? Can villagers who are illiterate have the benefit of the computers to send e-mails to their far off relatives and friends? What use is information technology in a country that has a low penetration of telephony and computers, where even electricity is not assured, and where millions are still illiterate? Is there any use in setting up computer labs at schools where the children even do not have chairs to sit? Why not use the money allocated to purchase computers to provide basic education and healthcare facilities to the poor? These are some of the standard questions put forward by this school.

The thinking of this schools id further apparent in the following statement:

"Let IT remain the staple for academics and professionals. What will it mean for people in the thousands of miserable villages in this misguided nation? Please, please come out of your ivory tower and see the plight of Indian villages, sans water, sanitation and decent living. Photographs of farmers posing with PCs and fishermen analysing computer printouts may befit a TV ad, but what are you trying to sell?"

(Extract from a letter to the editor of a leading newsmagazine, responding to a feature on the digital empowerment of rural India.)

Perhaps UN Secretary General Kofi Annan attempts to strike a balance by the following statement:

“Recent developments in the fields of Communications and Information Technology are indeed revolutionary in nature. Information and knowledge are expanding in quantity and accessibility. In many fields future decision-makers will be presented with unprecedented new tools for development. In such fields as agriculture, health, education, human resources and environmental management, or transport and business development, the consequences could be really quite revolutionary. Communications and Information Technologies have enormous potential, especially for developing countries, and in furthering sustainable development.”

This paper tries neither to prove nor disprove any of the above opinions, but intends to build a more realistic picture on the role of ICTs in addressing the poverty issues and bringing up the human development conditions in the developing world. For this purpose it intends to use six ICT for Development case studies taken from different parts of the developing world. The case studies are carefully selected to represent the different practical roles ICTs can play particularly in the rural and poor communities.

2.0 CASE STUDIES

2.1 Case Study I (e-Choupal, India)

e-Choupal initiative is an effort by a private firm to take ICTs to rural agriculture villages. The e-Choupals serve as both a social gathering place for exchange of information (‘choupal’ means gathering place in Hindi) and an e-commerce hub.

The importance of agriculture to India, goes without any argument. Agriculture in India accounts for 23% of GDP and employs 66% of the workforce. Because of the Green Revolution, India’s agricultural productivity has improved to the point that it is both self-sufficient and a net exporter of a variety of food grains. Yet most Indian farmers still live below the poverty line. Farmers have only an approximate idea of price trends and

have to accept the price offered them at auctions on the day that they bring their grain to the government-mandated marketplace, called a ‘mandi’. As a result, traders are well positioned to exploit both farmers and buyers through practices that sustain system-wide inefficiencies.

e-Choupal initiative initially began as an effort to re-engineer the procurement process for soya, tobacco, wheat, shrimp, and other cropping systems in rural India. Now it has also catalysed the rural transformation that is helping to alleviate rural isolation, create more transparency for farmers, and improve their productivity and incomes.

In the e-Choupal model, ITC, the company behind it, made significant investments to create and maintain its own IT network in rural India and to identify and train a local farmer to manage each e-Choupal. The computer, typically housed in the farmer’s house, is linked to the Internet via phone lines or, increasingly, by a VSAT connection, and serves an average of 600 farmers in 10 surrounding villages within about a five kilometre radius. Each e-Choupal costs between USD 3,000 and USD 6,000 to set up and about USD 100 per year to maintain. Using the system costs farmers nothing, but the host farmer, called a ‘sanchalak’, incurs some operating costs and is obligated by a public oath to serve the entire community; the sanchalak benefits from increased prestige and a commission paid him for all e-Choupal transactions. The farmers can use the computer to access daily closing prices on local mandis, as well as to track global price trends or find information about new farming techniques - either directly or, because many farmers are illiterate, via the sanchalak.

In the e-Choupal model, farmers benefit from more accurate weighing, faster processing time, and prompt payment, and from access to a wide range of information, including accurate market price knowledge, and market trends, which help them decide when, where, and at what price to sell.

Farmers selling directly to ITC through an e-Choupal typically receive a higher price for their crops than they would receive through the mandi system, on average about 2.5 % higher (about USD 6 per ton). The total benefit to farmers includes lower prices for inputs and other goods, higher yields, and a sense of empowerment. The e-Choupal system has had a measurable impact on what farmers chose to do. In areas covered by e-Choupals, the percentage of farmers planting soya has increased dramatically, from 50 to 90 % in some regions, while the volume of soya marketed through mandis has dropped as much as half.

In mid-2003, e-Choupal services reached more than 1 million farmers in nearly 11,000 villages, and the system is expanding rapidly. ITC gains additional benefits from using this network as a distribution channel for its products (and those of its partners) and a source of innovation for new products. For example, farmers can buy seeds, fertiliser, and some consumer goods at the ITC processing centre, when they bring in their grain. Sanchalaks often aggregate village demand for some products and place a single order, lowering ITC's logistic costs. The system is also a channel for soil testing services and for educational efforts to help farmers improve crop quality. ITC is also exploring partnering with banks to offer farmers access to credit, insurance, and other services that are not currently offered or are prohibitively expensive. Moreover, farmers are beginning to suggest, and in some cases demand, that ITC supply new products or services or expand into additional crops, such as onions and potatoes. Thus farmers are becoming a source of product innovation for ITC.

The e-Choupal model demonstrates that a large corporation can play a major role in recognising markets and increasing the efficiency of an agricultural system, while doing so in ways that benefit farmers and rural communities as well as shareholders. The case also shows the key role of ICTs - in this case provided and maintained by a corporation, but used by local farmers -in

helping bring about transparency, increased access to information, and rural transformation. Critical factors in the apparent success of the venture are ITC's extensive knowledge of agriculture, the effort ITC has made to retain many aspects of the existing production system, including maintenance of local partners, the company's commitment to transparency, and the respect and fairness with which both farmers and local partners are treated.

Source: Digital Dividend website

2.2 Case Study II (Grameen Phone - Bangladesh)

Grameen phone is an initiative of the Grameen Bank aimed at reducing poverty through the economic empowerment of women in rural Bangladesh. The Grameen Group manages the entire phone system, operating the GSM network and loaning money to village women to purchase GSM cellular phones. Phone owners rent the phones out to village farmers and other community members for a fee and also provide messaging and incoming call services.

These are few of the milestones the initiative has achieved so far:

- Phones have been placed in 1,100 villages. The 6 -7 year goal is to serve 500,000 subscribers, including 68,000 phones dedicated to serving rural areas.
- Village Phones have increased incomes and savings accumulation among phone owners, mostly women.
- Phone users, mainly local farmers, have increased their productivity through access to market information, weather reports and pest and disaster alerts.
- Farmers in phone villages receive up to 10 percent higher prices for

farm products and improved security of supply for inputs.

- A significant portion of phone owners' profits has been spent on paying for improved education and health services for their families.
- The phone service has also contributed to improvements in disaster response, crime rates and livestock mortality through better access to public services.

However, there are many obstacles still to be overcome. While Grameen Phone is a model for community development, the Grameen network is not integrated with the national fixed line network. This is due to telecommunications regulation in the country that, to a large extent, is being challenged by the rapid expansion of Grameen Phone. The wireless technology chosen by Grameen, based on well-known international standards, is expensive and not optimal for rural areas. Service quality has been inconsistent among phone owners and may have a negative impact on customer satisfaction.

These drawbacks of the model are often criticised by the competitive telecom service providers as well as the researchers. However, this should not be treated as a hundred percent perfect and economically sustainable model, as the objectives were not just to provide quality telecom services to poor, but also to open them a door to earn a reasonable monthly income. Where the customers are not in a position to afford the telecommunication services, it is not an easy task to achieve both these goals simultaneously. What is therefore required, is not unjustifiable criticisms but suggestion of more constructive ways to improve the model so it is both self-sustainable and useful for the community.

Source: ZEF Bonn-Center for Development Research and Quadir

2.3 Case Study III (Pride Africa – East Africa)

In most of the African countries, as in case of elsewhere in the third world, hundreds of millions of people lack access to the formal financial services. As a result, they cannot save, borrow, buy homes, or grow their businesses—a significant social and economic cost to the communities and countries in which they live. So most of these nations have started meeting the needs of the poor through micro-finance systems. There is nothing new in the micro-finance models; which were in existence at least for the last 3–4 decades. However, with the introduction of ICT these micro-finance projects have taken a dramatic new turn. Some of the crucial problems like the delays in providing micro-credit to the rural population, difficulties in maintaining records, monitoring and collecting have been successfully addressed by the models where ICT plays a crucial role.

'Pride Africa' is the largest micro-finance institution in East Africa and is addressing the challenge of eradicating rural poverty in an innovative way. The organisation has lending operations in five countries, a client base of 100,000, and reaches some of the poorest of the poor. Pride Africa's average loan size is USD 125, and these loans finance everything from trading operations to production of foodstuffs to manufacturing of clothing.

The business model of Pride Africa is built around proprietary software systems, uniform processes, and extensive training to achieve economies of scale that allow for rapid, cost-effective expansion. The software provides loan tracking, financial projections, and branch office management information. Its use has significantly streamlined the organisation's internal transactions, both reducing costs and demonstrating an approach to improving the fundamental inefficiencies of the micro-finance industry.

Software tools, telecommunications links, and other ICT technologies are even more

central to Pride Africa's strategy for the future. Pride Africa is negotiating relationships with commercial banks and intends to link micro businesses to the formal financial sector by playing a crucial intermediary role-aggregating loans and savings, and providing consolidated loan tracking, accounting, credit referencing, and credit/ debit card processing. In effect, Pride Africa will serve as a buffer between large commercial banks and thousands of small clients, and offer a range of financial services currently not available to micro-enterprises, particularly in poor communities. The intended result is greatly increased capital for micro-lending and rapid expansion in the number of branches and clients served, multiplying the development effects of micro-finance.

Most of Pride Africa branches are located where its clients are-in poor, semi-urban neighbourhoods. Linking these branches through an ICT network to facilitate daily loan operations, software upgrades, and staff training is now possible only via satellite. Pride Africa's plans for ICT infrastructure to play a more important role in the future, since it will be essential to link its branch network to commercial banks, enable non-financial business services and make possible expansion into rural communities. At present, however, the lack of ICT infrastructure in East Africa is a significant barrier to these ambitions.

Source: The Digital Opportunity Initiative

2.4 Case Study IV- (B2Bpricenow.com - Philippines)

B2Bpricenow.com, an e-marketplace for agricultural, chemical and construction products, enables farmers, cooperatives, and small entrepreneurs to do online trading via their cell phones. The e-marketplace allows both buyers and sellers to access information and perform transactions via SMS (short messaging service) or WAP (wireless application protocol), made possible by its

partnerships with Globe Telecoms and Smart Communications Inc.

Members of this tradenet can check prices of prevailing products and the status of their online trading as well as access product catalogues. B2Bpricenow.com aims to bring more farmers into the online marketplace so it provided a cheaper way of bringing the facility to them. They need not have access to a computer as the price information can be accessed via a cell phone. However, if the members wish so, they can also go to Internet kiosks provided by partner government agencies such as the Department of Agriculture (DA) or Land Bank of the Philippines and non-government organizations such as the Philippine Rural Reconstruction Movement (PRRM). Catholic churches also have livelihood centres run by the CBCP.net that provide Internet connectivity. These centres were established to help farmers learn computer and Internet skills.

Launched in February 2001, B2Bpricenow.com already has several thousands of active buyers and sellers in the agriculture, chemical and construction industries. The company has also formed alliances with the Land Bank of the Philippines, the Department of Trade and Industry (DTI) and DA to ensure that its online trading service would reach farmers, cooperatives and small and medium-sized entrepreneurs nationwide. The e-marketplace will help farmers offer their goods online, eliminating middlemen who do the trading and other transactions.

Among the partners, apart from providing the client base, Landbank also facilitates the signing up of members and provide loans to cooperatives that wish to purchase a computer and get Internet connectivity or to farmers who wish to buy mobile phones to access the Web site. As a technical partner, Unisys Philippines designed the Web site and maintains it. Ating Alamin, a show by agricultural guru Gerry Geronimo, is the sole content partner, responsible for maintaining and updating information on the

latest trends in the agriculture sector. Payments for the online trading in the e-marketplace can be made through fund transfers facilitated by partner banks like Landbank, 1st e-Bank and Union Bank of the Philippines. Meanwhile, PRRM and the Polytechnic University of the Philippines (PUP) will provide training and seminars on basic Internet know-how and e-commerce to farmers, SMEs and cooperatives for the e-marketplace.

Source: Computerworld Philippines

2.5 Case Study V (Akashganga - India)

Akashganga is a project that introduced IT-based tools that could increase the efficiency and productivity of the Indian dairy industry at a grassroots level. This was a project started by a private firm called Shree Kamdhenu Electronics Private Ltd. (SKEPL), in 1996, with a capital of less than USD 11,000. SKEPL provides integrated solutions, marketed under the brand name of Akashganga, that automate the milk collection process at local dairy cooperatives. The Akashganga system not only minimises handling and increases efficiency, but also increases transparency, and creates a basis for improving the quality of the milk produced.

Milk industry is another vital sector in the Indian economy. India has quadrupled its milk output within forty years and has become the world's largest milk-producing nation, with a gross output of 84.6 million tons in 2001. It has achieved this on the strength of a producer-owned and professionally-managed cooperative system, despite the fact that a majority of dairy farmers are illiterate or semi-literate and run small, marginal operations. For many dairy farmers, selling milk is their sole source of income. More than ten million dairy farmers belong to 96,000 local dairy cooperatives, which sell their product to one of 170 milk producers' cooperative unions which, in turn, are supported by fifteen state cooperative milk marketing federations.

In spite of these achievements, India's dairy industry is relatively inefficient and unproductive, with yields per cow less than one-fifth those of foreign producers who will soon have access to India's domestic market under WTO rules. Moreover, much of India's milk products are of relatively poor quality, a consequence of poor animal health, a polluted and unclean environment, and manual handling delays. The resulting poor quality prohibits Indian milk from being exported.

The business model of Akashganga is centred on providing technology-based products and services to help milk cooperatives become more efficient and productive. The company provides complete IT-enabled solutions that automate the milk collection process at local milk cooperatives. Its high-end system, selling for about USD 3,300, incorporates an electronic weighing system, a milk analyser to test milk quality, a PC, and accounting and management software. Compared to earlier manual procedures, the Akashganga system is faster, more accurate, and more transparent. That means milk can be sent on to the cooperative union for processing more quickly, reducing spoilage; farmers can see for themselves the weight and quality of their milk via a display and printed receipt, increasing their trust in the cooperative process. In addition, farmers are paid immediately, rather than sometimes days later as under manual procedures; and local cooperatives need fewer employees and have better records and reports for planning purposes.

In just a few short years of operation, the Akashganga brand has become quite popular in the Indian dairy industry, especially in the states of Gujarat and Maharashtra, where the bulk of the company's 600 installed systems are located. The company and its founders have received wide recognition for their efforts. Moreover, the company has been consistently profitable, and has recently raised additional investment to enable it to expand more rapidly.

With the success of its basic model, SKEPL plans to incorporate Internet-based information and communication technology (ICT) into its products to facilitate online information exchange between local cooperatives and milk unions. In addition to featuring access to Akashganga's dairy portal, the upgraded system will also enable farmers to exchange e-mail and obtain information in local languages about market prices of milk and dairy inputs, as well as general access to information about hospitals, government offices, educational institutions, and market prices.

Akashganga's success demonstrates the potential of information technology to impact livelihoods in poor, rural communities. Its experience indicates that even illiterate or semi-literate people can adopt IT-based systems when they see tangible benefits and when the systems are deployed in purposeful, easy-to-use ways. SKEPL's experience also indicates that providing direct benefits and expanded opportunities to poor communities in developing countries can be profitable. Akashganga, in tying its future to improving the productivity of its customers, will succeed to the extent that it can help transform the fortunes of rural dairy farmers, demonstrating the synergies between business and development goals.

Source: Digital Dividend website

2.6 Case Study VI- (Horizon Community, Mahavilachchiya, Sri Lanka)

There are not many examples, which illustrate the use of ICT for community building. Probably, this is because the developing societies have not yet reached that level. A rare example comes from the remote village Mahavilachchiya in Sri Lanka. This project is unique in itself, because unlike many other ICT for Development projects, this is not an initiative planned in Colombo. It is purely an effort started at the village level.

Mahavilachchiya is no different from the 14,000 other villages in Sri Lanka. Located in the Anuradhapura district 240 km away from the capital, Colombo, this hamlet is home to a few hundred people, all engaged in subsistence farming. Only a few houses have electricity, and none have a telephone. It is beyond the signal range of mobile phone networks.

However, Mahavilachchiya is today known far and wide in the global village. A Google search results in over 50 hits. Through the sheer efforts of a schoolteacher and his students, the village has placed itself on the global Internet map. More interestingly, it has produced some of the finest writers, digital photographers, web editors, web developers, graphic designers, programmers and computer technicians in Sri Lanka. The oldest is 17 years old and the youngest only 7. Together, they have developed the first website in Sri Lanka that is designed entirely by the children, at <http://www.horizonlanka.com>.

The individual behind this success is the young English teacher. He was appointed to teach English in his own village in 1997 and was paid about USD 30 per month. He found the students' knowledge of English extremely poor. Many could not even utter a complete sentence. He took it upon himself as a challenge to develop methods to teach his students to use English in practical situations. Within a short period, a few of his students began to excel in their studies and produced their first handwritten magazine 'Horizon'. It was photocopied and sent to foreign diplomatic missions in the faraway capital.

In response, the US Embassy donated a second-hand 486 PC and a printer. Neither the teacher nor his students had ever seen a computer, let alone use one. But the teacher soon mastered the machine on his own and taught his students as well. Around this time, a journalist visited Mahavilachchiya and wrote an article on the efforts of this enterprising young man. Having read the article on the Web, a Sri Lankan expatriate

working in Japan helped him and his team to produce the first website for the 'Horizon School'. This was the forerunner to the comprehensive and graphics-rich website they have today.

Today, Mahavillachchiya has a small computer centre, used by the students not only to learn computer skills but also to design websites for international clients. In addition, several students have PCs at home. A scheme named Digital Butterflies was started to encourage students to save money. When they have saved Rs 5,000 (USD 50), the teacher finds a donor who will match that amount – just enough to buy a second-hand computer. The money earned from designing websites and graphics goes to a common account, which is used to develop the computer centre. Apart from being computer experts, all are now fluent in English. In July 2003, they presented their work at the annual sessions of the Computer Society of Sri Lanka.

Several reasons make this a unique experience in Sri Lanka. It is a genuine and successful attempt to bridge the digital divide and to overcome the English-language barrier. It was initiated from the village, not from the city. It has changed the lives and improved the prospects of a few dozen children. The youths at the village now have more career options than just to join the military (for men) or become garment factory workers (for women). They have marketable skills, confidence and, above all, an entrepreneurial spirit at a young age. Apart from initial equipment donations, no donor or government funds have supported this initiative – which is perhaps why it continues to thrive when donor-driven ICT projects die off after a while.

Source: Wijeya Pariganaka magazine's coverage of the Horizon School.

3.0 CONCLUSION

The following are some of the key lessons, which can be learnt from these initiatives.

1. **It is a myth that ICTs are only for the 'urban rich', and not for the 'rural poor':** As all these examples shows clearly there is no reason why the rural poor can enjoy the benefits of ICTs as much as their urban counterparts do, though they do it in a different manner. For most of the urban elite ICTs are business tools at work and perhaps entertainment at home. For poor they can be more indispensable instruments used in carrying out their day-to-day work.
2. **ICTs are not Alladin's lamp:** ICT4D projects cannot make millionaires overnight. None of the above projects have elevated anyone from rags to riches. None of the projects even have taken anyone exceptionally over their income level. However, over a period of time these projects have made their income levels and lifestyles better. They are no more exploited by forces they do not understand. They are not victims of a vicious circle.
3. **At the rural level, ICTs are for communities, not just for individuals:** Another lesson all the above projects teach us is that ICTs are excellent development tools when used to advance the socio economic levels of a community. For this, it is essential for the entire community to involve in the ICT4D activities. This does not mean ICTs cannot be used at individual levels, but more the contribution of the community, more the benefits.
4. **ICTs are not just tools that make money. They uplift the socio economic conditions of rural communities in a broader sense:** In most of the examples above ICTs do more than just increasing the

- income levels of the rural communities. The last case study shows how ICTs can be best used for educational purposes at the village level.
5. **The technologies themselves can do nothing. What requires most is the effective participation of the communities:** None of the above examples use any advanced technology. What required at the rural level is not advanced technologies that can do marvels but more adaptable and cost effective solutions, which can deliver the true sense. In some of the latest developments, the ICT firms in India, try hard to create a market for less-advanced and cheap products instead of advanced and expensive products. (eg. Sub USD 100 laptops with FOSS as OS, Mesh Networking etc) This means that technology can do nothing when there is no community participation and on the other hand, even the least advanced robust technology can do wonders with proper participation.
 6. **ICT4D initiatives are far from perfect. There are still enough room for development:** None of the above examples are perfect. Some has serious limitations in the solutions they offer. (eg. A Grameen Phone cannot be connected to any other phone; the Horizon project finds it difficult to sustain without external funds) Sustainability issue is foremost among the challenges such an innovative has to face. This means still there is enough room for innovative thinking.
 7. **A strong leadership from the village is essential for the success of any ICT4D project:** Though not highlighted in every case study above, the experience of the development scientists show this is an essential condition. Unlike in the urban environment, where the market conditions create more room for business, in rural environment someone has to take the lead. This is a good guideline for any organisation that wishes to start such a project. The success of any ICT4D project largely depends on the leadership at the village or community end. There are so many examples that the projects have faced an untimely death, due to the lack of community leadership.
 8. **ICTs will not necessarily change the lifestyles of the rural communities. Rather they will introduce new methods of doing the same old activities:** None of the projects above have dramatically changed the lifestyles of the people. They will live perhaps in the same ways they would have earlier, but at a more satisfied and secure level.
 9. **In most of the countries the problems are same. So the solutions too cannot be too different. It is worthwhile learn from each other:** At present there are no strong networks among the organisations which get involved in ICT4D initiatives, except for few such as Bytes for All and i4d. Sometimes it is seen very similar initiatives are being carried out in different countries without any collaboration. (eg. Several initiatives that is based on the same concept behind the Philippine's B2Bpricenow.com are now being carried out in many countries including Kenya, India and Sri Lanka.) Had there been networks linking these initiatives, definitely they would have benefited everyone more.
 10. **It is a myth that key economic projects should be launched by the government. The private sector as well as civil society**

organisations can play a major role in ICT4D projects: None of the above projects were launched with the backing of the respective governments. Perhaps were there any government backing none of them would have even met the success. The reason is government is not the ideal organisation, which can implement such a project. The red tape procedures themselves would have brought the projects to a premature end. On the other hand, a non-governmental organisation or a private sector firm is in a better position to launch such a project. This can be a key success factor.

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