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Using information and communications technology to reduce poverty in rural India

Information and communications technology can improve poor people's lives—but only if policies and projects are designed to exploit its potential.

The World Bank's *World Development Report 2000/2001: Attacking Pover*ty identifies three crucial elements of poverty reduction efforts: opportunity, empowerment, and security. Experiences in rural India—the focus of this note—show that information and communications technology can enhance poor people's opportunities by improving their access to markets and health care. It can empower them by expanding their use of government services. And it can increase security by widening access to microfinance.

Supporting pro-poor market development

In Gujarat computerized milk collection centers are helping ensure fair prices for small farmers who sell milk to dairy cooperatives. The fat content of milk used to be calculated hours after the milk was received; farmers were paid every 10 days and had to trust the manual calculations of milk quality and quantity made by the staff of cooperatives. Farmers often claimed that the old system resulted in malfeasance and underpayments, but such charges were hard to prove. Computerized milk collection increases transparency, expedites processing, and provides immediate payments to farmers.

Improving health care delivery

In Andhra Pradesh handheld computers—provided under the InfoDev-sponsored India Healthcare Delivery Project—are enabling auxiliary nurse midwives to eliminate redundant paperwork and data entry, freeing time to deliver health care to poor people. Midwives provide most health services in the state's vast rural areas, with each serving about 5,000 people—typically across multiple villages and hamlets. They administer immunizations, offer advice on family planning, educate people on mother-child health programs, and collect data on birth and immunization rates.

Midwives usually spend 15–20 days a month collecting and registering data. But with handheld computers they can cut that time by up to 40 percent—increasing the impact and reach of limited resources.

Increasing access to government services

Since January 2000 Gyandoot—a government-owned computer network—has been making government more accessible to villagers in the poor, drought-prone Dhar district of Madhya Pradesh. Gyandoot reduces the time and money people spend trying to communicate with public officials and provides immediate, transparent access to local government data and documentation. For minimal fees, Intranet kiosks provide caste, income, and domicile certificates, enabling villagers to avoid the common practice of paying bribes. The kiosks also allow small farmers to track crop prices in

Information and communications technology can increase poor people's opportunities, empowerment, and security

the region's wholesale markets—enabling them to negotiate better terms for crop sales. Other services include online applications for land records and a public complaint line for reporting broken irrigation pumps, unfair prices, absentee teachers, and other problems.

Kiosks are placed in villages located on major roads or holding weekly markets, to facilitate access by people in neighboring villages. The network of about 30 kiosks covers more than 600 villages and is run by local private operators along commercial lines.

Expanding microfinance

Smart cards that hold information on clients' credit histories are lowering transaction costs for Swayam Krishi Sangam (SKS), a microfinance institution in the Medak district of Andhra Pradesh. One of the main problems facing SKS—which uses the group lending model developed by Bangladesh's Grameen Bank—is the high cost of delivering services to poor borrowers. All cash transactions occur at village meetings, and each takes about 90 seconds a person. Considerable time is spent completing paperwork, discussing loan terms and conditions, and counting money. Office computerization alone would not save much time because SKS staff would have more free time during the day but not in the morning and evening—when villagers are available for meetings.

Smart cards lower the cost of delivering services by eliminating paperwork, reducing errors and fraud, and expediting transactions during meetings. As a result SKS's operational costs could be cut by nearly one-fifth once the cards are fully implemented. Once all its transactions are conducted with handheld computers, SKS plans to leave a read-only device in each village so that clients can check the information stored on their smart cards.

Narrowing the digital divide

These examples show that information and communications technology can help reduce poverty. But the diffusion of such benefits remains limited because poor and rural areas suffer from widespread illiteracy, high access costs, and insufficient information and communications infrastructure—creating a digital divide.

Poor people in India have very limited access to information and communications technology. A recent survey of five villages in Andhra Pradesh, Uttar Pradesh, and West Bengal found that radios are the only type of such technology owned by most poor households (Marwah, in Pigato 2001). Few families have access to a computer or Internet connection, and some have never viewed television, read a newspaper, or used a telephone. Poor people rely on information from family, friends, and local leaders—but these informal networks do not satisfy their information needs. The digital divide can be addressed by policies that increase connectivity and by projects that take into account the constraints facing poor people.

Policies to achieve low-cost connectivity

Low-cost access to information infrastructure is the basic (but insufficient) necessity for reaching poor people. Inadequate or nonexistent connectivity and unstable power supplies reduce the economic viability of projects promoting information and communications technology.

Opening telecommunications to small entrepreneurs

Competition in telecommunications can slash service costs, improving poor people's access. In India market reforms significantly increased the number of telephone mainlines between 1997 and 2000. But because telecom privatization permitted prospective operators to bid for the right to operate in an entire state, only large corporations could participate. Indian states are large, and bids of more than $1 billion were common. Large telecom operators tend to limit their operations to higher-income urban areas because poor rural areas have lower revenue potential and higher service costs.

Privatization should be opened up to allow small entrepreneurs to supply telecom services in rural areas. Though revenues are lower, small entrepreneurs can—and want

Reaching poor people requires low-cost access to information infrastructure . . .

to—earn profits in such markets. In India cable television microentrepreneurs sell connections, install dish antennas, provide services, and visit subscribers to collect fees and fix problems. Customers know these operators personally. For these reasons cable services are considered superior to telephone services.

Adjusting regulations and subsidies

Allowing entry by small entrepreneurs is unlikely to be sufficient to provide basic connectivity to the poorest, most isolated rural areas. In urban India a telephone connection costs $650 for phone booth operators, and operators must earn $190 a year to break even. Telephones are more expensive in rural areas: a line can cost $1,500–1,700, so operators must earn $425 a year to break even. Because most information and communications technology projects are recent, experience on sustainability is limited. Few of the Gyandoot kiosks (see above) have achieved commercial viability.

Regulations and subsidies can increase access to information infrastructure. Examples include geographic coverage requirements and universal access funds. Private operators can be invited to bid to provide services in areas that are not commercially viable in return for a subsidy financed from a universal access fund. A concession contract is then awarded to the company that requests the smallest subsidy. In Chile this approach has leveraged $40 million in private investment in telephone lines based on just over $2 million in public subsidies. As a result 1,000 public telephones have been installed in rural towns—at about 10 percent of the cost of direct public provision.

Designing interventions to reach poor people

Even if information infrastructure reaches rural areas, there is no guarantee that poor people will access information and communications technology. Many projects that provide Internet access in rural India end up favoring middle-class and educated men. Rural women in particular tend to be excluded because of their restricted mobility, lack of education, and in some cases male control over information and media. But successful projects show how project design can help reach the poor.

Grassroots intermediaries

Information and communications technology projects that succeed in reducing poverty are generally run by organizations with a proven track record in working with poor people. Gujarat's dairy cooperatives have reached small farmers for years. In Andhra Pradesh auxiliary nurse midwives have been working with poor villagers for a long time. SKS, the microfinance institution, is dedicated to reaching the poorest women in rural areas. In addition, diversity among project operators and trainers—in terms of gender and caste—is important to promote poor people's participation.

Local ownership

Applications developed by or in collaboration with local staff are more likely to suit local conditions and to be sustainable. Outside control and top-down approaches, by contrast, often waste resources. Rajasthan's state-sponsored e-governance program has failed even though the software is easy to use and delivered in Hindi—because centralized planning did not take into account local conditions.

Local languages and information

Illiteracy and knowledge only of local languages are powerful obstacles to people's use of information and communications technology. To be relevant for poor people, applications must be available in local languages and, to the extent possible, be visually oriented and use voice interfaces. For example, the handheld computers used in the India Healthcare Delivery Project use software designed in line with the literacy levels of health care workers.

In addition, content provided through information and communications technology should not be limited to knowledge from outside sources, but extended to draw on knowledge held by poor people. The

. . . as well as projects designed to suit their needs

InfoDev-sponsored Honey Bee Network, based in Gujarat, provides a database of solutions to local agricultural problems—an excellent example of gathering and disseminating poor people's knowledge.

Training and awareness

Training is another important aspect of successful information and communications technology projects. Because learning is more effective through practice, innovative and interactive training is more successful. India's Self-Employed Women's Association has trained poor women to use video cameras and audiovisual equipment. A team of 8 full-time and 20 part-time members is now producing videos as a tool for learning, education, development, and policy action.

Raising awareness about the potential of information and communications technology is also important. Providing content not directly related to development goals—such as news, matrimonial ads, and entertainment information—can increase the use of Internet kiosks. A recent survey in rural India found that entertainment programs and news are the types of information most often accessed by the rural poor (Marwah, in Pigato 2001).

Rigorous monitoring and evaluation are needed to determine if the benefits of information and communications technology projects are worth the projects' costs—especially for the many pilot projects now under way. Experience with monitoring and evaluating such projects is limited, and such activities deserve greater attention.

Further reading

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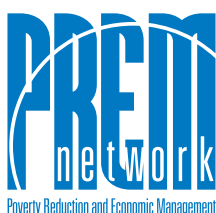
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