Rural Telecenter Impact Assessments and the Political Economy of ICT for Development (ICT4D)

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Education, knowledge, information and communication are at the core of human progress, endeavour and well-being. Further, Information and Communication Technologies (ICTs) have an immense impact on virtually all aspects of our lives. The rapid progress of these technologies opens completely new opportunities to attain higher levels of development. The capacity of these technologies to reduce many traditional obstacles, especially those of time and distance, for the first time in history makes it possible to use the potential of these technologies for the benefit of millions of people in all corners of the world.

WSIS Declaration of Principles, 2003

Greater clarity is required in deciding what telecentres projects are aiming to do. If these issues are not thought through, there is a risk that telecentres will either 'fail' and waste money, or will serve to bring the division between the 'information haves' and 'have-nots' into communities - creating a local digital divide.

Benjamin and Dahms, 1998

Introduction

Most of us do not live in the digital age. Over 80% of the world's population does not have access to information communication technologies (ICTs). The gap between people who are able to use and benefit from technologies and those who are not is referred to as the "digital divide". Only ten percent of the world's population uses the internet and this access is skewed. While 58% of people in US and Canada are users, only 5% in Asia Pacific and less than 1% in Africa have access. [1] This divide is also uneven within countries and communities. In the United States, only 31 percent of students enjoy Internet access at home and only 56 percent of students have Internet access at school.[2] This phenomenon can be conceived of as a gap in terms of ICT implementation, access and usage rates occurring between regions, developing and developed countries, mature and emerging markets, or within countries or communities.

[1] The World Bank, the ITU and the World Economic Forum track national trends in the penetration of various technologies: fixed and mobile tele-density, PC's per thousand people, Internet accounts, locally-developed web sites, and related data.
[2] Report of the Web-Based Education Commission to the President and the Congress of the U.S., December 2000, p. 26

Many believe that access to information communication technologies (ICTs) will minimize this gap and bring human progress, improved standards of living, and the benefits associated with informational economies. The view holds that "everyone, everywhere should have the opportunity to participate and no one should be excluded from the benefits the Information Society offers."[3] Examples often posit the increase in the numbers of ICTs as an indicator of this perceived progress, with billions of personal computers and mobile phones owned worldwide.[4] Others claim that a key feature of ICT is its strong network externalities. Since people prefer to interact with others that use similar technologies and solutions, the value of being connected to the network increases exponentially with the numbers of users connected. This implies for many that a lack of access leads to a lack of opportunities.

Information Communications Technologies for Development (ICT4D) is one movement involving a broad spectrum of "stakeholders" that links increased *access* to ICTs to economic and social *development*. However, according to Keniston, Director of MIT India, ICT4D

> Commitments, stories and hopes are built almost entirely on an empirical vacuum. We know almost nothing about the factors that make for effectiveness or ineffectiveness of grassroots ICT projects in developing nations. But instead of research to counter or address such claims, we have 'stories' - to be sure, largely true stories of successes - from which trustworthy generalizations are impossible).[5]

Many of the stories center on deployments of rural ICT kiosks – or telecenters - that provide access to ICTs for educational, personal, social, and economic development. Because of the dearth of empirical studies and substantiated cases, this paper investigates the role of telecenters in terms of the ICT4D for movement and provides an evaluation mechanism to assess the *differential* ways rural telecenter projects are impacting individuals and communities.

[3] WSIS Declaration of Principles
[4] The number of mobile phone users has gone from 16 million in 1991 to over a billion by 2003, overtaking mainland telephone lines at the turn of the millennium (ITU, 2004).
[5] Kenneth Kenniston (2002). "It for the Masses: Hope or Hype" available at http://web.mit.edu/~kken/Public/PAPERS/EPW_paper.html

ICT4D Movement

In 2002, ICT as a tool for enabling social and economic development was formalized at a meeting of the G-8 where major industrialized nations acknowledged that for some of the world's population, ICT "is one of the most potent forces in shaping the twenty-first century [and] its revolutionary impact affects the way people live, learn and work, and the way government interacts with civil society." As a result of the meeting, the Okinawa Charter on the Global Information Society created a call to bridging the international information and knowledge divide. The G-8 had also launched a Digital Opportunity Task Force (DOT Force) in 2001 in order to provide a strategic framework for both public and private stakeholders to harness ICTs for development purposes (DOT Force, 2001). Extending from these efforts, the UN General Assembly held the "World Summit on the Information Society" (WSIS) in Geneva in December 2003, a forum for interested "stakeholders" from governments, international organization, nongovernmental organizations and industry. The outcome of the meeting was the ICT4D Platform, a set of concrete goals associated with the "strategic framework" previously generated by the G8 DOT force and outlined in the Okinawa Charter[6] (Figure I).

Figure I.

ICT4D Platform Goals

1. Innovating for Equitable **Access**

- access/connectivity/last/first mile innovation incl. wireless
- financing ICT4D (financial mechanisms)
- affordable solutions
- open solutions/open source

2. Enhancing Human **Capacity**

[6] ICT4D Platform as the largest Summit Event is organized by the Swiss Agency for Development and Cooperation (SDC) jointly with the Global Knowledge Partnership (GKP).

- capacity building (formal & non-formal educational skills
- developing/e-learning
- youth
- women/gender
- indigenous communities/people
- health

3. Strengthening **Communications**

- enhancing communication through media
- intercultural communication
- humanitarian aid and disaster information systems
- conflict prevention and resolution

4. Promoting **Local Content**

- local culture, knowledge and content
- indigenous knowledge
- local media

5. Fostering **Policy**

- e-strategies and policies
- e-governance (including security)
- e-commerce/e-business

Today, the ICT4D movement involves a host of interested public and private players, including every agency of the United Nations, the World Bank Group, and the International Monetary Fund (IMF), development donor aid governmental agencies including Canada (CIDA), the Netherlands (NORAD), and the United States (USAID), governments at all levels, grassroots and international non-governmental organizations, private organizations with the express purpose of bridging the digital divides and business leaders who are increasingly acting as development agents like their partners listed above. Most of these stakeholders have committed large resources to the development of rural information kiosks as places that provide access and training to first time ICT users and a direct conduit to the Information Age.

ICT4D and the rural telecenter movement

According to Roman and Colle (2001), a telecenter is a rather loosely used word to describe places that offer the public connectivity with computers and networks.[7] The more narrowly focused cybercafes or Internet kiosks are also important because of their potential to become telecenters as they mature. The idea of a community sharing computer technology emerged in the 1980s with the introduction of the telecottage in Scandinavia. The initial purpose of telecottages was to fight against marginalization of remote rural places in the information society. The assumption around telecenters are that appropriate information contributes to development, provides economically ways for users to access information, and provide viable links to ICTs (ibid).

According to the International Development Research Center in Canada, hundreds of rural telecenter projects exist worldwide with the explicit aim of providing benefits of social and economic development (e.g. ICT literacy and training, access to indirect medical services, information exchange to improve job creation to name a few).[8] There are many ways that these assumptions have been integrated into the operating and financial models of rural telecenter projects, those that are run as public, private or public-private partnerships (Appendix 1). As described in the appendix chart, telecenters are differentiated by a number of factors, from their funding models to their goals. The majority of projects, however, remain anecdotal and have not been substantiated by further study, unless otherwise noted. Along with large resources promoting ICT4D, more and more supporters look to rural telecenters as a way to gauge the

[7] This definition aligns with the multi-purpose community telecenter approach suggested by the International Telecommunications Union (ITU) and others. This definition also differentiates between *connectivity* and *access*. We use connectivity to refer to the physical availability of information and communication technologies. Access, a more complex matter, refers to the economic, sociological and psychological factors that influence persons' opportunities to use the technologies.

[8] IDRC provides a list of telecenter projects and studies, including Acacia, a well known project in Southern Africa, at http://web.idrc.ca/en/ev-28301-201-1-DO_TOPIC.html

benefits of access – and a primary reason impact assessments are becoming increasingly necessary.

Assessing development impacts of telecenters

Increasing in number worldwide, telecenters kiosks can provide opportunities for many – the owner, the community liaison group, the operator, the funders, and the users. However, there exists no agreed upon evaluation of their impact given the variety of telecenter experiences and communities served. At this stage, our focus is specifically on those which have services that are priced sub-market, or are established through subsidies in areas that market forces would not normally enter due to poor profitability. These can be public or private.

There are two critical problems with evaluating telecenters. First, telecenters reside in a nebulous space between entrepreneurial ventures and development projects. This means a multiplicity of indicators are required to assess the project – both qualitative and quantitative. Second, impact occurs across scales, from the individual, community, regional, national to international, which requires a geographical lens. Third, telecenter projects are a form of human development infrastructure, for which evaluation is highly time-dependent. In evaluating telecenters, we thus face the same problems as we would with educational systems or social development infrastructure. Synthesizing our own field experience with other evaluation and metrics techniques, we propose a local-based pre-evaluation and impact assessment tool for telecenter kiosks.

Why focus on impact assessment?

Many believe telecenter kiosks provide a digital window to the global economy, an opportunity to gain access to the 'information haves'. Others fear they skew benefits and create unintended consequences. Telecenter impact assessments can replace questions by answering if and how access to ICTs produces benefits to the individuals and communities they serve. This is

increasingly important as more telecenters are funded by external supporters, including NGOs, donor agencies, multilateral organization, and multinational corporations (MNCs). Not only do they need to establish credibility and value for the technology and projects they bring, but need to validate the assumption that technology can and will play a central role in bridging technology divides. In the case of MNCs, evidence of impact will be crucial in convincing a global audience that a company can deliver on its commitment to help to bridge the digital divide and partner with the right partners to do so.

Many of these stakeholders want to know the extent a telecenter can contribute to sustainable development. Telecenters often focus on ICT and improving communication. A telecenter, therefore, will only be able to influence wider development issues such as business and education development to the extent to which information and communication is important to individual users. Social development processes are long term and complex. The telecenter will be able to demonstrate clearly the outcomes of deliverable of its efforts (e.g. number of computers provide, numbers of people trained, etc). However, even with detailed baseline information and ongoing monitoring, it will always be limited in the extent to which it can demonstrate how these outcomes have led to development impacts.

Why the focus on indicators?

Indicators are central to any impact assessment. As measuring devices, they define what data to collect and at what time intervals. According to PACT director, finding measures of impacts on individuals, organizations, and the community is a key objective of most evaluation studies. Is the telecenter a positive force for community development? Does it benefit some people more than others? Does it act as a catalyst for other positive initiatives and innovations at the local level? Does it help people to help themselves? These questions convey the assumptions and vision of

the promoters and funders of telecenter programs. Other questions are narrower and more practical. Is a telecenter is more beneficial to some economic sectors than to others? For every user who comes to the telecenter, how many others are indirect beneficiaries? Are there drawbacks to the telecenters, and who suffers as a result? What features of the telecenter are responsible for the greatest number of benefits and their most equitable distribution? How can these features be strengthened and replicated?

Impact assessments can start the process of answering if and how access to ICTs produces benefits to the individuals and communities they serve. It is clear that impact measurement of telecenters, like most development projects, is highly contextual – and thus hard to quantify. Clearly, even defining success is highly contestable.

However, it is important that some framework to judge projects by is created. The use of quantifiable indicators in this is increasingly important as more telecenters are funded by external supporters, including ngos, donor agencies, multilateral organization, and multinational corporations (MNCs). Not only do they need to establish credibility and value for the technology and projects they bring, but need to validate the assumption that technology can and will play a central role in bridging technology divides. In the case of MNCs, evidence of impact will be crucial in convincing a global audience that a company can deliver on its commitment to help to bridge the digital divide and partner with the right partners to do so.

These indicators do not help us in deciding whether or not a project is “successful”, but when more than one project is measured using the same sets of indicators, cause effects outcomes can be arrived upon, and comparisons can be much more meaningful. A critical problem with current telecenters evaluations is the lack of uniformity in terms of the kinds of issues analyzed. Clearly, a number of the questions and indicators mentioned here are either not easily measured without

context, or simply impossible to measure. For the researcher, such indicators serve purely as a point of departure to better understand the regions they study.

What indicators will be used?

Indicators tend to focus on performance, sustainability, content and overall impact. In this paper, we focus on a telecenter's social and economic impact. Social impact, for example, is comprised of both outputs and impacts.

- Outputs are the measurable "actions" that result directly from the program operations (e.g., number people helped, number of services offered)
- Impact are the effects of the program on the social problem it was intended to address (e.g. computer literacy or job creation)

Outputs are generated for the duration of the project, and can be collected with certainty over a defined period of time if and when the proper systems are in place. Impacts may not be visible or measurable for a certain period of time after the project has ended. Monitoring the impact of a telecenter will be helped by having a clear set of objectives and key performance/impact indicators, in particular by identifying in advance why a specific activity is being undertaken, how it is intended to improve the livelihoods of people and how this improvement will be measures. This will also require a system of internal monitoring and reporting in order to predict, monitor and assess performance.

-Outputs or deliverables from telecenter activities such as numbers of people trained

-Processes of the telecenter, such as the success of different partnerships

-Outcomes of telecenter activities, such as improved education level

-External factors which may affect the impact of the communities, such as macroeconomic and political chances, or other initiatives affecting ICT access

Who will be involved in ongoing monitoring? A useful first step would be to consult with different groups within communities to develop indicators of progress for use in collaborative monitoring and evaluation.

Sample Telecenter Project Evaluation Methodology

The extensive evaluation criteria provided in this paper (Figure II) are applicable to projects that have an infrastructure component to them, ie – the telecenters are a network. The objective of this work is to see if large state deployments of telecenters can be measured for the benefits they are providing.

The approach taken in this paper is to break the evaluation of telecenters into stages – first the stage of Pre-project evaluation, and the second that of One-year implementation evaluation. The first aims to study whether an area is an appropriate location for a telecenters project. The second evaluation looks at whether the telecenters, over a period of time (one year here) have accomplished any short term goals. The main instruments for such an evaluation include a survey, an economic survey, and interviews with telecenters owners/operators.

In addition to the factor of state involvement (and thus subsidy), three important assumptions are made in this second evaluation. First, that there is a "network" of telecenters – each of which is one unit of study, and that the relevant population or study area for each is measured at the same time from the inception of each specific telecenter. Second, it is assumed that one year is an appropriate time period for measurement across all the telecenters for the results/outcomes set out by the telecenter. Finally, it is assumed that the entire population of areas where such telecenters are placed are "affected" and thus can be included in the random sample for surveying.

This work is inspired by the work of IDRC on telecenters indicators and UNESCO in educational services evaluation.[9] It is also critical to see these evaluation metrics from the point of view of the Akshaya project in India, which have been used as a point of departure in putting together these indicators.

How to use

The evaluation tables have been broken into modules – such that each module can stand alone, answering one question. Thus researchers can choose which modules they wish to pick for a specific project, based on what importance of the indicators to the telecenters project they are evaluating. Ideally, each project should be evaluated on all the modules included in the tables, however, this may be prohibitive in terms of cost. The first test of this evaluation mechanism will be on the Akshaya project in rural Kerala. This will involve a 2000-user household survey, and an in-depth study of local economic information. To gauge the value of these indicators, it will be critical to test them in multiple field sites.

Figure II:

Stage 1. Pre-project evaluation

Question	Key Indicators	Approach	Summary
A1. Is there a viable, recognized market?	Existing Alternate establishments (number of existing cybercafés, library internet access areas, public access e-governance centers) **RP (Immediate Relevant Population)**	Market Sizing, Interviews with entrepreneurs on expected short-term returns	For accurate estimation figures, it is useful to get numbers for a certain location and extrapolate these against another region without the same investment in telecenters. **Relevant questions from survey:** • Do you know how to use a computer? • Does anyone in your family plan to enter into service sector jobs? • How much did you spend on long-distance calls last month?

[9] Whyte, Anne, Understanding the Role of Community Telecentres in Development - A Proposed Approach to Evaluation, Mestor Associates, Report of an International Meeting on Telecentre Evaluation Far Hills Inn, Québec, Canada - September 28-30, 1999

	Population targeted by the service[10] / Population already served
	
	CQ (Coverage Quotient) =
	
	Population currently using cybercafés / Relevant Population
	
	Related Spending Quotient =
	∑ Median Related Spending[11] / Relevant Population
	
	Perceived Demand
	∑ Willingness to spend on telecenters services / Relevant Population
	
	Price Gap =
	
	Number of non-users due to high pricing / Relevant Population
			• How often do you use cybercafés?
			• How much did you spend the last time you used a cybercafé?
			• How far is the cybercafé from your home (plus people who do not use due to distance)?
			• Do you feel the usage charges for services at the cybercafe are too high?
			• Do you / or any household member travel to another town for cybercafé access?
			• How much would you be willing to spend per month on
			  • Computer games
			  • Internet surfing
			  • Computer training
			
			Relevant secondary research:
			• Per-capita household spending on long-distance calls
			• Number of household computers in the target area
			• Sales of computers in the target area
			• Number of public and shared – access computers in the target area (including cybercafés and computers at schools)
			
			What specific issues are addressed here:
			• What is the estimated population coverage of a telecenter, relative to:
			  • Per capita expenditure on comparable services
			  • time distance from population concentrations
			• What is the success / survival rate of comparable establishments

[10] This in the case of an e-literacy project, the relevant population would be the entire population, in the case of a telecenter with VoIP, the survey of households will help to find how many persons make long distance calls in the district, and so on, depending on what the services of the telecenter.

[11] Depending on the services offered by the telecenters, this will vary –for instances, for VoIP providing telecenters, long distance phone spending is relevant,

	Optimal Distance = Mean distance from existing facilities of non users		
B1. What is the local awareness of computers?	**Computing ability** (CA) **Internet awareness** (IA) **Internet Users** (IA) **CA (HH)** = No. of computer users / Households **IA (HH)** = Weighted score of internet aware popn. / Households **IU (HH)** = Weighted score of computing aware popn. / Households **Computing information sources** = Frequencies of various IT knowledge sources / Respondents **Market reflection of local demand (HH)** = Number of public use computers / HH	Survey instruments	Computing and internet awareness are fairly complex indicators. To compute these, we set out a number of questions that test a survey respondent's conceptual awareness of the technologies and of the uses of these, and create a scaled score based on this combination. **Relevant questions from survey:** • How many times have you used a computer in the last one month? • Do you plan to purchase a computer in the next year • Have you ever taken a computer class? • If you need to know more about computers, who do you go to? • Which computing concepts are you familiar with (Windows, Word, Internet, programming languages etc.)? • Would you go to a course that teaches only Linux-based alternative to Windows applications? **Relevant secondary research:** • Number of household computers in the target area • Number of Internet users in the target area • Growth of Computers/Internet users in reference region over two calendar years • Number of computer course institutes in the target area • Number of computing students (including public and private schools) in the target area • Growth of computing course institutes in reference region • Interviews with industry on the importance of proficiency on specific software skills (Windows,

	Number of computer teachers / HH **Open Source Brand Consciousness** = Number of persons willing to accept Linux alternative / Respondents		Unix, Adobe) as a requirement for service sector jobs **What specific issues are addressed here:** • Expected growth of computer/internet users in the target users • Brand awareness of computing products and software, its importance in adoption • Local perception of Operating Systems, and their importance in decision-making in investing in computer classes
C1. What are people spending on related costs?	**Per Capita Exp. on communications** • Land lines • Wireless / SMS • Print • Television • Postage **Communications Expenditure** = ∑ HH Comm. Exp / Relevant HH[12] *(operational and capital expenditure)*	Secondary economic statistics, survey instruments	This broadly benchmarks the kinds of disposable income used for communications. These do not indicate the transferability of expenditure from communications into telecenters, but offer broad ideas on what some existing expenditures in a similar space are. **Sample questions from survey:** • How often do you make long distance phone calls? • Do you own a (cellphone/landline)? • How much did you spend last month on (long distance + news + TV + postage)? • Have you used telephony services at a cybercafé / would you use next month • What percentage of your income do you spend on telephony? **Relevant secondary research:** • Net purchases of television sets in the target area / change in the reference region • Net expenditures on long-distance communication in area / change in the reference region • Change in usage of telephony

[12] Refers to only those household that do not have home access to the Internet. This assumes that home users will not use public telecenter facilities – there is however a strong possibility that home users make public access center use, and attempts are on to factor in a proportion of home users that qualify as potential telecenter users

			services in cybercafes in reference region over the last six months (or less, if available through kiosk owner survey) • Difference, in number of minutes, of telephony service available through cybercafés at same cost as alternate telecommunications usage[13] **What specific issues are addressed here:** • Sizing of communications expenses transferable to telecenters
D1. What is the profile of the community, scope of community ownership of the project?	Community involvement in telecenter placement, Electoral participation, Social Networks, community business clustering **CI** = $\frac{\text{No. of telecenter votes + interested volunteers}}{2 * \text{Voting population}}$ **Political involvement for socializing project =** Percent respondents aware of meeting called to discuss project **Points of emphasis for project**	Survey instruments, interviews, mapping of business patterns	This attempts to document the role played by community dynamics in the successful organization and implementation of these projects, the basic assumption being collaborative project designs are better shaped to succeed. The critical indicator here is what percentage was involved in the decision to set up the telecenter. **Sample questions from survey:** • Where do people from your locality usually congregate? • Was there a meeting called to discuss the possibility of creating a telecenter in your community? • Did you vote for the telecenter? • What are the prevalent problems in your community? • Do you feel community/local government funds should be allocated towards computing resources? • If you had an opportunity to volunteer your time for the community telecenters in the next six months, would you do so? **Relevant secondary research:** • Level of inclusion in community decision making (qualitative measure)

[13] This is relevant where there is a cost difference between the analog/digital telephony services offered through homes and public phones, and the IP-based telecommunications offered through telecenters/cybercafés

	socialization = Frequencies of local areas referred to as weekly congregation points in survey		**What specific issues are addressed here:** • What are the locations where publicizing the telecenter project can have maximum effect • How supportive is the community of the idea of a community technology center

E1. What is the level of local human development?	Education
	Media and Communications: Television Access per capita
	Newspaper readership per capita
	
	HDI (Human. Development Indicator)
	
	GDI (Gender Development Indicator)
	
	GDI (Computing) 1=
	Number of households with at least one female able to use computers / HH
	
	GDI (Computing) 2=
	Number of households open to women enrolling in Computer Classes / HH
		Secondary economic statistics	Human development is used as an indicator to look for potential areas as well as potential baseline readiness requirements for telecenter projects. Such baselines have not been developed yet, but it is possible that research in the future will show greater likelihood of success among such projects given certain minimum human and gender development attainment.
			
			Sample questions from survey:
			• How much schooling have you completed?
			• Do you plan to send your girl children to computing classes / telecenters?
			• How many household members are users of computers (at least n times last month)
			• What sector are you working in?
			• How many members in the household are currently looking at shifting to service sector jobs?
			
			Relevant secondary research:
			• Enrollment in schooling, adult literacy
			• Employment in service sector jobs
			• Outward mobility of service sector labour
			
			What specific issues are addressed here:
			• Understanding the local market for
			  • Audience size
			  • Subsequent jobs in service

			sectors arising from computing training
F1. How does the project cost spread over the population?	Machine cost per capita (HH) of relevant population, Telecenter cost per capita of serviced population **CP** (Cost to Popn.)[14] = $\frac{\text{Computers Cost (Yr)}}{\text{Relevant HH}}$ **CTP** (Computers to Popn.)[15] = $\frac{\text{No. of Computers}}{\text{Relevant Population}}$ **CT** (Cost to Telectr)[16] = $\frac{\text{Telecenter Cost (Yr)}}{\text{Relevant HH}}$	Market sizing	Useful comparative statistic for looking at various telecenter projects with similar deployed systems **What specific issues are addressed here:** • How much is being spent per household in running the project • How many persons of the total population does each public computer cater to
G1. What are people doing currently that telecenters can replace?	Expenditure per unit on current alternative to telecenter service, calculated over the annual recurrence of these services **Replacement Benefit** =	Interviews, survey	This measures what services the telecenter provides that people currently spend on – thus the cost of obtaining a certain product (such as an e-Government document) is used as an indicator, the number of times such a document is needed yearly is calculated, and divided by the cost per capita per annum, to achieve the replacement benefit. **Sample questions from survey:**

[14] In this case the relevant households refers to the targeted population
[15] In this case the cost of each telecenter per year, is related to the number of households to compute a per household cost of the project.
[16] This measure looks at the total cost per head served, per telecenter

	Expected HH savings year
	CP
			• How much did it cost you the last time you got:
			  • agricultural info
			  • weather information
			  • government services
			  • *any alternate service the project provides[17]
			
			Relevant secondary research:
			• Statistics of waiting periods or costs involved in providing service which telecenter replaces[18]
			• Job loss arising our of the establishment of the telecenters
			
			What specific issues are addressed here:
			• Are there overall cost and efficiency benefits in implementing the project
			• Are there immediate cost benefits visible to the users of the project in adopting the services

H1. What are peoples' perceptions of their most urgent needs?	**Needs to Solution Ratio** (evaluating the number of persons who rate a critical need in an area that the telecenter offers solutions in) **Needs Comparison** = Weighted no. of concerns where telecenter apps. exist Weighted total concerns	Survey instrument, statistical data	This indicator uses survey responses on the needs of the local people, comparing it to the services offered at the telecenters. This indicator lends itself to criticism since the articulation of needs may not be precise, nor adequately sum up the potential demand for the service, but in certain cases, for instance if the lack of facilities in schools were a major community concern, and a telecenter offered that, then it is a reasonable indicator of the local relevance of the telecenter. **Sample questions from survey:** • Housing material used • Access to electricity / running water

[17] This measures only the cost, assuming that the quality of services coming from the telecenter will be the same as those currently availed – thus our question here does not deal with whether agricultural information available is beneficial in terms of better prices, but simply in price savings of delivery mechanism

[18] For instance, in the case of telecenters that provide e-government services, we would use data on the cost savings in transferring the activities online, and the job losses involved in the process

	**Speculative indicator, to be used only for contextual understanding		• Availability of secondary school in the target area • What were the three biggest community-related problems today? • If you do not wish to learn (or have your children learn) to use computers why not? • Are there neighborhoods in the community, where you prefer not to visit for business purposes? **Relevant secondary research:** • Records of major political issues facing the target area • Poverty and infrastructure review of the target area **What specific issues are addressed here:** • Understanding if certain needs of the community are central to understanding the local area
I1. What structural factors influence the telecenter implementation?	**Organizational Complexity** Graphs of organizational charts involved in decision-making related to: 1. Top-level decisions relating to funding project 2. Daily running of telecenters 3. Equipment purchases 4. Course offerings	Interviews	This indicator is useful in measuring the likely political factors in the implementation process. This indicator is used to look at how the process of resource allocations, telecenter placements, and project administration are affected by the political and bureaucratic structure. **Sample questions from survey:** • Was there a meeting called to discuss the possibility of creating a telecenter in your community? • Did you vote for the telecenter? • How many times in the last year have you visited a government or political office? **Relevant secondary research:** • Who initiated the telecenter project • How open is the decision-making process for allotment of resources (telecenter franchises, purchase orders)

			• How many steps are involved in each purchase decision • How adaptive is the decision-making structure to competition forces • Are the estimates for the costing of the project competitive compared to market rates ***Indicator (Year 1):*** $\frac{\textit{Expected cost per telecenter}}{\textit{Grey market estimate for same facilities}}$ • Are there any subsidies offered to telecenter owners, if yes, what percentage of their risk is offset by these subsidies? ***Indicator (Year 1):*** $\frac{\textit{(Expected Profit + Cash subsidy)}}{\textit{Net open market cost}}$ **What specific issues are addressed here:** • How well-prepared is the organization structure for competitive market • If there are organizational issues such as high subsidies, what is the potential that these may have an adverse effect on the project
J1. What are the opportunities available in the local area arising out of telecenter applications?	Shift-share analysis of local region, Historical service sector job creation indicators **Migration:** Migrants per family of relevant population **Migration aspiration:** Responses with at least one member	Economic and regional statistics	These indicators help us get a understand the local socio-economic profile. This may not assist us in making reasonable predictions on whether or not a project will survive, but if combined with post-implementation evaluations, such regional profiles can be used to understand outcomes better. **Sample questions from survey:** • Number of economic migrants from the family • Can you confidently operate a computer (task specific) • If you do not wish to learn (or have your children learn) to use

	with desire to move out of reference region HH **Service Sector aspiration:** Responses with at least one member with desire to move into service sector positions HH currently in primary / secondary sector employment		computers why not? • Would you prefer your child to stay in the same occupation / geographical region? • Is anyone from the family looking for a service sector job? **Relevant secondary research:** • Local economic mix, shift-share analysis • Analysis of service sector activity in reference region (incl. Growth in jobs in computer-related professions) • Educational / training skill survey of persons in service sector occupation • Growth of higher educational institutions in the reference region • Growth of computer training facilities in the reference region **What specific issues are addressed here:** • Perceived economic scope of computing-related projects • Regional shift towards service sector possibilities
K1. What are the household-level social factors that affect adoption?	**Technology Relevance Perception:** (Frequency of refusal reasons in joining computing classes) **Generational Technology Relevance Perception:** (Frequency of refusal reasons in having children join computing classes)	Surveys, Media	These indicators let us quantify some essential factors to understand about the home life that affect the adoption of technology in the target area **Sample questions from survey:** • Which member (gender-specific) of the household is using cybercafés / computers • Why does this member use the cybercafés / computers • If you do not plan to send your children to computer training (gender-specific), why so? • Are there any neighborhoods you feel uncomfortable in visiting for business purposes (if so why?) • How many letters are written in

			your household in a week? • How many newspapers are read? **Relevant secondary research:** • Documentation of gender and ethnic relations within the target area **What specific issues are addressed here:** • What social factors relating to home and family are likely to support or impede the success of the project

Stage 2: One-year implementation evaluation

Question	Indicators	Approach	Summary
AA1. Is the project financially sustainable for entrepreneurs?	A number of financial indicators can be used for this segment **Business and Economic Indicators** • **Operational expenditures** (start-up and operating costs) • **Operational revenue** (public and private sources, membership fees, revenues from core business and ancillary activities) • **Percent break-up of revenue**	Budget Accounting	This measure of operating income can indicate whether a firm can sustain operations without additional infusions of capital. Interviews of telecenter owners are needed here. (Note: telecenters are considered financially viable if they cover their operating costs) **Relevant secondary research:** • Review of financial data at the telecenters • Data on indirect effects on employment and income, arising from the telecenters projects **What specific issues are addressed here:** • Comparison of revenues and usage from communications-related activities with content-related

[19] Must be adjusted with the total number of cybercafés or for-profit establishments in related businesses

	generating activities • **Capital re-investment rate** • **Entrepreneur income generated from indirect effects** **<u>Project-specific indicators</u>** **Overflow**: (Measured through total pending franchisee applications) **Crude supply sizing:** Telecenters with operating profit at the end of year of reference[19] / Relevant Households[11]		activies, to study the direction of future investment • What is the optimal size of telecenters projects
BB1. Are people using the telecenters?	**No. of active users** (by gender, age, occupation, frequency) **Use of alternatives to telecenters** **<u>User Perception Indicators</u>** **Gross Usage Expectation:** Responses with at	Sample surveys, telecenter records when available	This looks at what percentage of the users are among the early adopters of the telecenters **Sample questions from survey:** • Which member (gender-specific) of the household is using the telecenters? • Why does this member use the telecenters? • Is a member from the household using an alternative (to the telecenters being evaluated) • If you do not plan to send your children to computer training (gender-specific), why so? • Do you plan to use the telecenters this coming month? How many

	least one household member planning to use telecenters in next month HH **Paying Usage Expectation:** Responses with at least one household member willing to pay for continued usage HH		times? • Would you pay to use the services? (If yes, how much – ballpark) **Relevant secondary research:** • Review of applications used, if recorded at the telecenter • Interviews of telecenters owners with specific questions relating to chosen indicators **What specific issues are addressed here:** • Is there a short-term demand perception • If economic sustainability is low, are there usage patterns that justify the telecenter's existence?
CC1. Is the telecenter providing acceptable service performance?	**Service interrupted per unit of time**, on account of • electricity supply • phone service • equipment failure or loss • System maintenance • labor • operational inefficiency	Survey, Entrepreneur interviews	Each indicator needs to be measured separately. This is a critical indicator for technologists who seek to locate actual technology gaps. **Sample questions from survey:** • Were the computers at the telecenters working during your last visit for usage purposes? • Was the internet working during the last visit…? • Are you satisfied with the quality of teaching / assistance available at the telecenters? **Relevant secondary research:** • Interviews of telecenters owners with specific questions relating to chosen indicators • Power metering, if possible. Survey of local power usage **What specific issues are addressed here:** • What areas should technologists

			focus to make telecenters more efficient • Are there regional patterns in the kinds of technical problems faced at telecenters
DD1. What do people use the telecenters? (*extension of entrepreneur sustainability with greater user focus*)	**Internet use** (total and pattern of traffic, user connect time, number of users by category of user, usage logs, users' available online time at telecenter) **Percent earnings by service offered** **Frequency of responses of usage stopping related to QoS** **Entrepreneurship growth due to telecenters** (persons gaining customers through the telecenters) **Content use assessment:** (controlled tests) Number of iterations of users accessing content created by the telecenter / Total content access	Entrepreneur interviews, usage logs, survey	These answer qualitative questions on how essential the service has become to users. **Sample questions from survey:** • Which of the following (…) services did you use during your last visit to the telecenter? • How much did you spend (and on what services) during the last month, on the telecenter? • If you were once a user, but subsequently stopped using the telecenter, what was the reason? • Have you made any business contacts or direct sales? • Have you found a job through the telecenters? **Relevant secondary research:** • Application and Web Usage logs **What specific issues are addressed here:** • What areas should technologists focus to make telecenters more efficient • Are there regional patterns in the kinds of technical problems faced at telecenters
EE1. Is the demand for technology products growing because of the project?	**Home computer purchase change:** Post-telecenter purchases of computers by users of	Surveys	These questions are harder to answer in the short term, since it is not easily quantified whether the purchases of any equipment are directly related to the existence of the community telecenters. However, some outcomes

	telecenters HH **Home software purchase change:** Post-telecenter purchases of software by home users HH **Institutional computer purchase change:** Post-telecenter purchases of computers by Institutional buyers HH **Training effect:** Post-telecenter number of respondents with at least one family member in computer classes HH **Networking effect:** Post-telecenter growth of memberships in electronic networks HH		such as the number of persons taking up advanced computer courses after taking their first classes at telecenters are easily measured. **Sample questions from survey (only for users of the telecenters):** • Have you decided to purchase a home computer since the starting of the telecenters project • Have you decided to purchase any software since the starting of the telecenters project • Have any members of your family decided to join computer classes since first using the telecenter **Relevant secondary research:** • Sales figures of computers in the local area **What specific issues are addressed here:** • How do the telecenters affect secondary markets • What kind of supporting applications, services, devices are likely to be needed in areas where telecenters exist to enable demand
FF1. How involved is the community in the telecenters?	**Individual-level community activism due to involvement in telecenters:**	Surveys, Focus groups, interviews	Research has shown that community ownership of these projects can affect the success of telecenters. These outcomes may not be evident in the early stages of the projects, but may

	No. of respondents with community contacts built from telecenters Respondents who have used the telecenters at least once **Community-level activity:** No. of respondents with community contacts built from telecenters HH **Community involvement in decision making** (from Stage I evaluation)**:** **CI** = No. of telecenter votes + interested volunteers 2 * Voting population **Community Organization Growth:** New organizations established out of the telecenter **Community Content Usage:** Number of persons to access the telecenter's own generated content		be a critical indicator of the net effect of the telecenter in time. **Sample questions from survey:** • Why have you not used, or stopped using the telecenters? (use reasons related to the local community) • Has the community telecenters enabled you to make new contacts? • Have you joined any social or political groups since joining the telecenters? • If you are part of a social / political group, have you used the telecenters for any activities related to your group? **Relevant secondary research:** • Community-related information on new groups, political activism coming out of the telecenters **What specific issues are addressed here:** • Are there community-specific issues that are affecting the success of a specific project? • What community areas do entrepreneurs need to focus on for better outreach • What kind of social outcomes can be expected from telecenters creation

	Telecenter as congregation point: Percent respondents referring to telecenters as a community-level meeting point		

GG1. What have been the economic impacts of the project?	**<u>Direct Effects</u>**
	
	Gross revenue effect of telecenters
	
	Tax revenues from telecenters
	
	Number of employees of telecenters (indexed to number of telecenters)
	
	<u>Indirect effects</u>
	
	Number of jobs generated due to telecenters setup (construction, computer sales, I/O approach)
	
	Number of jobs earned through telecenters training (skill-building related)
	
	Number of jobs earned through telecenters networks usage (Internet searches for jobs, other networks)
	
	Community retention of jobs
		Surveys, Economic data	In the early stages of the project, it is rarer to see tangible economic benefits
			
			Sample questions from survey:
			• Have you or any member of your family got a job due from training received at telecenters?
			  • If yes, has this person migrated?
			  • If yes, how much do they remit annually?
			• Have you found a job through Internet searching at the telecenter?
			• Have you purchased a computer following training to use computers at the telecenter?
			
			Relevant secondary research:
			• Economic data on migrant income coming into the community
			• Sales of computing equipment (or other equipment relevant to the project) over the period of functioning of the project

	(local ability to absorb jobs): Percentage employed and earning wages within community after receiving training (earlier indicator, less migrants) **Influx of migrant wages due to telecenters-attributable jobs** **Other Economic Activity** • Number of for-profit computer training centers to open in the area following the telecenters operations • Sales of computers attributable to interest created by telecenters		
HH1. How price-efficient was the project impleentation?	**Cost competitiveness with grey market**: (compare to technical equipment, personnel charges, construction costs) Cost of setting up a telecenter using grey market equipment / Cost per telecenters set up **Post-amortization competitiveness:**	Entrepreneur interviews, market research	This is an important indicator with qualitative and quantitative implications. It is important not only to compare the project with the grey market, but also to study the process involved in **Relevant secondary research:** • Estimation of costs involved in creating similar projects in the targeted area • Research into tendering process for equipment procuring **What specific issues are addressed**

	Cost of setting up a rival telecenter on present date Amortized cost of telecenter set up **Franchisee Acceptance** No. of telecenters Total number of franchise applications **<u>Qualitative Indicators</u>** **Transparency Perceptions and stakeholder analysis** **1. Equipment** No. of approvals currently involved in making a purchase decision No. of approvals ideally involved (*or compared to competitor's approval process*) **2. Franchising** No. of approvals currentlly involved in making a decisions relating to franchising No. of approvals ideally involved (*or compared to competitor's approval process*)		**here:** • In what areas can the telecenter project be more efficiently organized • Are there structural problems in any of the key areas that affect the functioning of the project • How do the stakeholders affect competitiveness of the project

	3. Strategy decisions No. of approvals currentlly involved in making a strategy decision relating to expansion of services --- No. of approvals ideally involved (*or compared to competitor's approval process*) **4. Hiring** No. of approvals currentlly involved in making a hiring decision --- No. of approvals ideally involved (*or compared to competitor's approval process*) **Time competitiveness:** *(This can be measured inexactly only with a specific factor, such as addition of a new technology)* Average time taken to respond to a market need --- Average time taken by a competitor		

Conclusion

We intend to use this telecenter evaluation in multiple sites to better compare public-private rural telecenter projects across geographies (e.g. India, Brazil and South Africa) and to modify the tables accordingly. The aim of this effort is to find a way to substantiate claims made by ICT4D telecenter projects (supported by different stakeholders in sites around the world) to decide if and how access and training are creating positive social and economic development.

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Appendix I Telecenter Models

Project	Description	Project characteristics	Financial model/support
Supported through sale of products/services			
Digital Divide Data Cambodia	Non-profit data entry outsourcing center whereby workers (all orphans under 25) convert digital images into a more finished website product for clients around the world.	Combines Education, vocational training, and work training. Clients receive tangible financial benefits Financially self-sustainable in 9 months with highly visible clients like Bain Capital, Tufts University Library Partnerships include a wide variety of institutions including many local Cambodian organizations as well as multilateral agencies.	End-user clients pay for BPO services rendered, while project beneficiaries receive paid wages for working on client projects. Financial sustainability implies that operational overhead is being covered by end user client fees-for-services.
Orphan IT *India, Philippines & expanding in Latin America and Asia*	Training and employment in areas of web development, data processing, BPO & online marketing projects, offered through telecenters.	Partnerships with leading ICT companies Training and quality control: Students (all youth under 20) receive mentoring and scholarships. Project sustainable and expected to become profitable. 30 clients on waiting list. Measurable poverty reduction goals: 10-year is to create USD100,000,000 of new business, via the OrphanIT Jobs Gateway to 1,000 ICT computer centers from 10,000 customers, creating over 50,000 jobs and taking 250,000 families out of poverty by 2012. Clients who use affiliate marketing services pay 1/10 what they would in the U.S.	Same as above
Samaikya's Agritech Centres* *India*	Samaikya's Agritech Centres provide services and technical assistance to farmers, including: inputs, machinery hire, tools and spares for sale, soil and water analyses, field mapping, weekly field inspections, field visits by specialists, and weather monitoring.	These centers are permanently manned by qualified agricultural graduates called Agricultural Technical Officers (ATO) and are equipped with computers linked to the head office in Hyderabad, through a modem to modem telephone connection. Advice from the centers is based on data generated from pre-validated crop cultivation practices adopted in the State and provided by the government agricultural services and local institutions. Farming information is up-linked from headquarters to the computers at the centers. One centre closed down within three months because no farmers registered for the service. After local suppliers and marketers of inputs threatened to cut off essential supplies if they registered with the center. Analyses of local farming practices, and political	Supported by farmer membership fees Fees based on ability to pay: farmers pay $3 subscription to center, per growing season, per acre/crop

		and cultural context conducted before selecting a site. Information provided in English and often must be translated by the ATO for the farmer.	
Keltron Information Kiosks* *India*	Kerala State Electronics Development Corp. operates kiosks that are not networked, but provide free services to customers.	Trained staff is on hand to provide assistance. In addition to public internet use, the kiosk is implementing a series of government information systems for: agriculture support, covering crops and pests; census data, with summaries and the official list of people below the poverty line; the electoral role; a grievance reporting and tracking system with facilities for email to ministers; industry information, on a variety of licensing, regulatory and support schemes. Plans are in hand to develop further applications for: e-education, income certificates, domicile certificates, caste certificates, local e-mail, employment news	Operated by the Panchyats and function as independent profit centers. One kiosk operates a 64kbps leased line with 20 terminals, 12 of which were connected to the internet at December 2001. The centre provides public internet access to around 50 people daily, charges Rs.25 per hour and has daily revenues around Rs. 1,400.
Gujarat Computerized milk collection centers *India*	In Gujarat, computerized milk collection centers with integrated electronic weights, electronic fat testing machines and plastic card readers are ensuring fair prices for farmers who sell milk to dairy cooperatives.	Computerized milk collection centers have increased transparency, led to faster processing, shorter queues and immediate payment to farmers. The 50,000 dairy farmers who use the computerized system benefit from a more transparent and efficient cooperative system	
Drishtree and Gyandoot project *India*	Sustainable information kiosks that provide e-government services market information , and private information exchanges and transactions in India	Services range from agricultural information, including market prices; copies of land records (required to take out loans); online public grievances and redress; village auctions; government transparency Network: kiosk computer runs Drishtee application software. Kiosk database is updated whenever the kiosk is connected to the district server or web server. District server is local content provider, providing data such as commodity prices, etc.	Kiosks franchised out; franchisees charge fees-for-services Financial sustainability unclear, although report claims it will be as Drishtree franchises more kiosks.
Mixed (financing from public and private sources, including the sale of services)			
Community for Democratizing Infomatics (CDI) *Brazil*	CDI's approach is the co-development of self-sufficient sustainable schools of computer skills and Civil Rights. Communities wishing to open a school must abide with CDI´s rigorous process to	The use of cross-subsidy. Students are encouraged to create computer-based extra services for the local community to help cover costs. They then pay some fee to the school for use of the facilities**.** Like Skumars.com, they make use of regional support centers – committees for an entire region that take responsibility for supporting all centers in the region. Rigorous management application process - The local community must prove they are serious by	

	ensure that the schools are autonomous after CDI helps them to implement the program. Over the course of 3-6 months, CDI trains the instructors, works with the school to seek an initial hardware donation, and helps the school to install the computers."	going through a fairly involved procedure. Rigorous demand measurement and prediction. As part of the process, the applying community must survey local demand. The program is designed so that trainers can achieve twice the local minimum wage – and even twice the salary of teachers in public schools. This is done by a) knowing how many students one instructor can teach over a period b) knowing how much locals will be able to pay c) knowing how many locals are interested d) having a very simple lesson plan worked out. The program is rigorously focused on education – connectivity is an afterthought. Only 10-20% of the schools have connectivity.	
Jan Mitra *India*	Internet kiosks provide services in rural areas. Set up under Jan Mitra UNDP-Government of India Initiative	Kiosk operators provide services in the public interest, free of charge. These services include information on public services, development schemes and information related to hygiene and health. Kiosk operator can charge a fee for printouts, internet connection, and keep a small markup for himself. Prices are controlled by Jan Mitra Kiosk operators can expand service offering	Supported by fees charged and support from government and development agencies
Rwanda Youth Rehabilitation Initiative *Rwanda*	Delivering basic computer skills, and skills in applications and database management to Rwandan orphans though information centers set up in cybercafés. Leverages already-installed network computers and donated software.	Sustainable project Hurdle: most computers were in English whereas most target customers spoke only Kinyarwanda. Partnerships, including Santa Clara University, E-inclusion Organization which provides fundraising and technical assistance, and Solve Poverty which sponsors, designs and hosts the projects website.	Self-sustaining through revenue generated by sale of ICT services in centre, which includes internet access, typing, photocopying, email and job placement. Training in website development is to be introduced.
Sari India	The SARI project is a collaborative venture of Indian Institute of Technology (IIT), Madras; MIT Media Lab; Berkman Center for Internet and Society, Harvard University Law School; the I-Gyan Foundation; and n-Logue Communications Pvt. Ltd. It uses the Wireless in Local	They provide a host of services such as computer education, email/voice mail/voice chat, web browsing, agricultural, veterinary, health, e-government services (birth/death, income, community certificates), and sending petitions to government officials for redressal of any complaints, etc. Most of the applications have been developed in the local language (Tamil) to facilitate easy usage by the local people. The project has developed partnerships with the state government, TN Agricultural and Veterinary University, and a private eye hospital for providing these services.	All services are charged on full cost recovery basis. The charges levied for various services are listed in Appendix 1

	Loop (WLL) technology developed at IIT, Madras, to provide internet connections in rural areas. Out of the total 39 kiosks, 20 are run by self-employed individual entrepreneurs and the remaining 19 are run by an NGO called Dhan Foundation.		
Project e Seva *India*	Web-enabled rural kiosks, established at the sub-district level and run by women's self help groups, provide a range of services, ranging from the issuance of various certificates, information access, loan and employment schemes, applying for an old age pension or asking for subsidized agricultural inputs. This services run on a district portal	Offers a broad portfolio of services ranging from e-government, to financial services, to community-based marketplaces and auctions. Institutions that benefit from the services delivered by kiosks, are chipping in to finance these units Especially benefits women 80 kiosks have enabled 300,000 transactions. 50million Rs have been collected for electricity bills.	Local governments are major partners but banks are also contributing to kiosk financing.
Donor-funded			
Engineers without Borders Scala Project *Philippines*	Delivery of IT training programs to disadvantaged youth through network of 19 telecenters.	Integrates IT training with life skills, such as promoting formal education and building positive relationships. Low-cost sustainable approach to setting up IT centers. Strong partner organization. National Office of the Department of Social Welfare and Development monitors projects after EWB leaves, while local DSWD offices are responsible for managing and sustaining resource centers.	EWB sets up centers on the cheap by leveraging volunteer and donated resources. In-kind donations finance about 70 per cent of the project's costs. In addition, "innovative cost-recovery models have been introduced to ensure the centre will be financially sustainable" though it is not mentioned what those models are.
Learning Resource Centre *Kenya*	Provides connectivity and technical assistance to students of Kenya Technical Teachers College to health them become better students, researchers, and	Wireless satellite connection (24-hour) helped overcome connectivity issues with TELKOM dial-up connections Provides team of assistance who can support students and lecturer with research and downloading.	Supported by UNESCO and Flemish Organization for Development and Technical Assistance (WOB)

	teachers		
Nabanna *India*	Builds a framework for information sharing, content creation, off-line information dissemination and web-based partnerships between local women and organizations located outside the region. Nabanna's ultimate plan is to build knowledge modules that will be a database of localized best Practices to help women solve local problems.	To facilitate information sharing, five ICT centers are being set up in Baduria and Rudrapur, Taragunia, Arbelia and Punda. The ICT centre in Baduria is the main hub while the other four centers will act as nodes. The Baduria ICT centre has two desktops and a printer/scanner. The others will have a desktop and a dot matrix printer. All the computers run on WindowsXP operating system and are equipped with eNRICH, MS-Office, Adobe Photoshop & Adobe Pagemaker. An Internet facility is only available at the Baduria ICT centre for the time being but networking with other centers has been made possible through the innovative use of portable drives.	Funded (at least initially) by a UNESCO grant
Other			
Swaziland Professional Handicraft Organization	Not a project, but the GTZ had granted the SPHO internet access in a cyber café for a year. In that year, this group had developed business tools (CVs, business cards) and used the internet to consult with former GTZ project advisors and consultants	Simply giving access to this group along with some key contacts to consultants and experts seemed to have helped this organized group to improve their individual and collective marketing efforts.	N/A (more a story of mobilizing collective action)
Habitat Learning Centre *India*	Habitat Learning Centre (HLC) is a multi-purpose learning centre running a wide variety of Programs for underprivileged children and facilitators (women) working in the slums of Delhi, India, who have never been exposed to computers and the Internet.	Extensive use of the internet has allowed HLC to be in constant contact with all its partner NGOs, and made co-ordination of various programs very simple. To date HLC has partnered with 29 NGOs, trained 209 facilitators and 731 children in the basics of computer literacy and computer applied skills.	No detail on centre financing provided
Vodacom phone shops	Vodacom is required to provide for rural access as part of its contract with the SA government.	The phone shops are run by entrepreneurs themselves, and cost around $5,000 each. There are over 760 of them established. The use of local entrepreneurial talent seems to be a key. Some of them are adding fax service and there are even reports of internet service.	
Universal	While 50 centres (and	This seems to have had some successes, but overall	

Service Agency South Africa	10 mini-telecentres) have been installed, with plans for more, there have been frequent issues with connectivity and management, as well as low usage levels. The cost is roughly $20,000 per centre.	is not considered a great success.	
Project Harmony (Health) *Armenia*	Creates online communities that enable health interactions (one way and two way) through establishment of Internet Computer Centers in schools.	Provided access health information and online consultations to Armenians that previously did not have access Provided interactive forums on topics that are relevant to Armenia's needs and lifestyles	

Unless otherwise noted, all of the following cases are from "Youth. Poverty. Gender. ICT for Development Success Stories" Knowledge for Development Series, November 2003. Those marked with an (*) from" Sustainable Telecentres? Two Cases from India" by Harris, RW., Kumar, A., and Balaji, V., The case marked with an (∞) is from "ICT for Poverty Reduction in Asia," Digital Dividends for the Poor, November 2003). Also includes: Can Information and Communications Technology Applications Contribute to Poverty Reduction? Lessons from Rural India, April 2003, Simone Cecchini and Christopher Scott; Telecenter Sustainability - Myths and Opportunities Francisco J. Proenza; SUSTAINING THE COMMUNITY TELECENTER MOVEMENT, Raul Roman & Royal D. Colle

Appendix II : Typical issues in measurement

- Was it clear from the outset of the program what types and magnitude of impact were being sought?
- Was baseline data collected or available at the outset of the program against which project could be measured?
- What output and impact data do program partners already collected for other purposes?
- Causation is more difficult to prove with impacts
- Research to track impact is often time consuming and expensive

Measuring

- Benchmarking
- Articulate problem that project was intended to solve
- Identify baseline/needs assessment
- Projects should be able to measure output
- Use partner orgs, government etc,

Typical measurement tools:

- Site visits, training observations, phone interviews
- End of training survey
- Case studies
- Qualitative info from site visits
- Collection of anecdotes
- Household survey
- Telecenter operator monitoring
- Telecenter user surveys

- Key informant interviews
- Focus groups
- Institutional reviews
- Ethnographic case studies
- Participatory research
- Electronic exchanges

Measuring Impacts – Typical high-end methodology

1. Scoping:
   - Understand the community/locality and identify and select control groups
   - Identify key segments within the community and control group
   - Understand hopes, priorities, problems and constraints of community members
   - Understand day in the life of community members
   - Develop a set of baseline metrics
2. Baseline data collection
   - Primary research to collect data on baseline metrics (both qualitative and quantitative data)
   - Typical parameters (based on sustainable livelihood approach[21]) include: livelihood strategies, perspectives and attitudes, physical, financial and information capital, Natural and human capital, and, finally, outcomes
3. Tracking
   - Data collection over time (or at regular time intervals) to track relative evolution of key impact metrics in the community and control group
4. Impact assessment
   - After x month/years, assess differential impact of the program based on data collected

Appendix III: Sample Survey

A. QUESTIONNAIRE TO PRINCIPAL RESPONDENT
Enumerator asks to speak to the person who is in the best position to speak about household wealth, income and outside activities

Qualifier:
Are you or any member of your family affiliated with the Telecenter project (kiosk owner, project staff) If Yes, Stop.

Module A1: Basic Identification Information

A1.1 Neighborhood Name: _____

A1.2 Principal Respondent's ID number ___ ___

[21] See http://www.livelihoods.org for more information

A1.3 Sex: 1 - M 2- F

A1.4 Respondent's Religion:

Circle One: 1 2 3 4

Detailed Response: _____
To be coded at data entry stage

A1.5 Date of Interview: Day_____/Month_____/Year_____

A1.6 Code of Interviewer: _____
Do not enter in computer

Sex of Interviewer : 1 - M 2 - F

Module A2: Demographic and Economic Information

A2.1 Persons in household.___

Size of household (persons living in house currently)
A2.2 Number of Adults (Males) ____
A2.3 Number of Adult (Females) ____
A2.4 Number of Children (Male) ____
A2.5 Number of Children (Female) ____

The following questions relate to housing quality

A2.6 External Wall Construction Material

Record main material used

Brick	1
Concrete	2
Wood	3
Tin/Zinc Sheeting	4
Tin Cans	5
Mud	6
Wood and Mud	7
Bamboo/Thatch	8
Canvas/Plastic	9
Other	10

Specify_____
Code at data entry phase

A2.8 Does the house have electricity? 1. Yes 2. No

A2.9 Does the house have running water? 1. Yes 2. No

The following questions relate to the goods owned by the household
Do you, or any other member of the household, own a

A2.10 Automobile (Car/Bike)	1. Yes	2. No
A2.11 Computer	1. Yes	2. No
A2.12 Bicycle	1. Yes	2. No
A2.13 Telephone	1. Yes	2. No
A2.14 Radio	1. Yes	2. No
A2.15 TV	1. Yes	2. No

Code at data entry phase

A2.16 Is your home owned or rented?

1. Own 2. Rented 3. Other

Migration

A2.17
Is there a member of your household working away from home who sends you money on a regular basis?
1. Yes 2. No

A2.21 If yes, where is this person?
1. Other Area in District/County
2. Area in State other than in District/County district
3. Area in Country other than in State
4. Area in the Neighboring Nations
5. Area in Western Europe or in the American Continent (US, Canada)
6. Other
7. No response
8. Not sure

A2.22
How many persons in the house are regular wage earners?
1. Yes 2. No

A2.23
What percentage of your home income comes from the migrant contributor?
1. 0-25%
2. 26%-50%
3. 51%-75%
4. 75%-100%

(Plus questions on how much remittance annually)

Module A4 Questions on community interactions

Read aloud: I would like to ask you about community interactions

A4.1 Is there a place in the village where people from the village usually meet daily, or several times a week? (explain these are general congregation points)

1. Yes
2. No

A4.2 If yes, what is this place?

1. Tea Shop
2. Bar
3. Panchayat building
4. Restaurant
5. Community Hall / TV room
6. Temple
7. Mosque
8. Church
9. Other

A4.3 Which of these you visit?
Enter the two most important responses:

1)	2)

A4.4 Is there a higher secondary school in your village/town?

1. Yes
2. No

A4.5 Does that school have a computer center?

1. Yes
2. No

A4.6 Are there any other computer training centers (other than Akshaya) in your locality?

1. Yes
2. No

A4 6 A (Do not ask this question) – Does the locality actually have

1. a higher secondary school
2. a computer center in the school
3. other computer training centers
4. an Akshaya center

A4.7 Have you ever used these computer training centers?

1. Yes
2. No

A4.8 If yes, did you find the services at the computer training center reasonably priced?

1. Yes
2. No

A4.9 (If you have children) are any of your children currently able to use computers, or learning to use computers?

1. Yes
2. No

A4.10 Do you plan to send your children to computer training? (questions tailored to India)

1. Yes – all children, both boys and girls
2. Yes – only selective children, based on intelligence or other qualities
3. Yes – but only boys (not applicable if household has only male children)
4. Yes – but only girls (not applicable if household has only girl children)
5. No

A4.11 If you do not plan to send your children, why not?

1. No use for computers
2. Cannot afford it
3. Girls need to work at home or fields/factory
4. Girls do not need to learn computers
5. All Children (boys and girls) needed to work at home or fields/factory
6. Computers/Technology are a bad influence
7. Other

A4.12 How many persons in your family have office jobs?

1. Yes
2. No

A4.13 Would you prefer your child to get an office job or continue in the traditional employment?

1. Yes
2. No

A4.14 Would you prefer your child to live in the village or move to a city / alternate location?

1. Yes
2. No

A4.15 Would you prefer your child to get an office job or continue in the traditional employment?

1. Yes
2. No

A4.16 Are you or anyone else in your family currently looking to change from your traditional employment to an office job?

1. Yes
2. No

A4.17 Do you plan to buy a computer in the near future?

1. Yes
2. No

A4.18 If yes, has this decision come about since the opening of the telecenter?

1. Yes
2. No

Module A3 Knowledge of Telecenter and Participation in its establishment

Read aloud: I would like to ask you about what you see as the main problems facing your community.

A3.1 Have you heard of the (----) Project before this interview?

1. Yes
2. No

A3.2 If yes, how did you hear about the project?

1. Village Council
2. Neighbors
3. Children
4. Friends
5. Telecenter Operator
6. Government official
7. TV / Radio
8. Hoarding
9. Other

A3.3 Have you heard of the (---) facility/course at the telecenter (pick what the project owners think of as the most essential service at the telecenter)?

1. Yes
2. No

A3.4 How much does it cost?

(*ask, do not show the answer)
1. Real Price
2. 0
3. Inflated price
4. Don't know/can't say

A3.5 Do you feel this cost is too expensive for computer services?
1. Yes
2. No

A3.4 Has anyone from your family used the telecenter?

1. Yes
2. No

A3.5 If yes, which member of your family used the telecenter?

1. Child Male (Age 0-16)
2. Child Female (Age 0-16)
3. Adult Male (Age 16-60)
4. Adult Female (Age 16-60)
5. Senior Male (60+
6. Senior Female (60+)

(ALSO interview / focus group question)
A3.6 Why did this person take the course / used the facilities (let the person answer, and then collate the answer to choices)

1. Because they are the man of the house
2. Only person with time to do the course
3. Because they are the smartest person at home
4. Person most interested in doing it
5. Senior-most person at home
6. Other

(ALSO interview / focus group question)
A3. 7 If nobody took the course, why not? (let the person answer, and then collate the answer to choices)

1. Never heard of it
2. Too expensive
3. e-Center is too far
4. No use of computers for us
5. Teachers are not good
6. Too busy to go for the training sessions
7. Akshaya entrepreneur permitted us to not take classes
8. Neighborhood where e-Center is located is not good
9. Conflict with e-Center
10. Religious issues
11. Other

(ALSO interview / focus group question)
A3. 8 In your personal opinion what were the three biggest community-related problems you faced n years ago? (the year before the telecenter project came in)

1 Poor transportation
2 Alcoholism
3 No schooling
4 Poor water supply
5 Poor health facilities
6 Religious conflict
7 Ethnic problems
8 Distance from health facilities
9 Lack of access to computers
10 Poor Internet connectivity
11 Lack of access to information (newspapers, magazines, internet)
12 Corruption

13 Lack of Jobs
14 Difficulty in access to credit
15 Other (Specify) _____
Code at the time of data entry

(interview / focus group question)
A3. 9 In your personal opinion, has this problem changed during the time of the telecenters presence?

1. Yes
2. No
3. Too early to tell

(interview / focus group question)
A3.10 In your personal opinion, can computers be used to solve these problems?

1. Yes
2. No

A3.11 Was there a meeting to decide about whether the telecenter project was needed for the village/neighborhood?

1. Yes
2. No

A3.13 Did you attend the meeting?

1. Yes
2. No

A3.14 Did you vote for funding for the project?

1. Yes
2. No
3. There was no voting

(interview / focus group question)
A3.15 Would you have preferred that the money spent by the government on telecenter was spent on another project instead?

1. Yes
2. No

(interview / focus group question)
A3.16 If yes, what would you have prefer_____

A3. 17 How many persons in the use the telecenter?

	Number of days in the last week	Hours per day in last week	Type of activity during last week 1=training 2=internet 3=games	For how long has been using the telecenter	Payment for use during last week

			4=commun. 5=other		
Person 1					
Person 2					
Person 3					

A3. 18 Have you taken the any course at the telecenter?
1. Yes 2. No

A3. 19 If yes, did you find it helpful in using computers?
1. Yes 2. No

(interview / focus group question)
A3. 19A If yes, what did you find it helpful in using computers?
_____ (coded)

(interview / focus group question)
A3. 20 Are you able to confidently operate a computer now (will make it task specific, rather than operate)?
1. Yes 2. No

A3. 21 Had you used a computer before using this telecenter?
1. Yes 2. No

(interview / focus group question)
A3. 21A How much experience using computers?
_____ (coded)

(If no , skip to next section)

A3. 22 Where had you previously used computers?
☐ at home ☐ at school □at work
□at someone's house □at another center

A3.23 What operating systems are you familiar with?
□Windows □Linux □Other □Do not know_____

A 3.24 Tasks
Check for each one of these tasks that you are able to do

Internet		
1	Open a web page (e. Yahoo.com)	□Yes □No
3	Send an email	□Yes □No
4	Search for information on the Web	□Yes □No

	Create a web page	
Office Tools		
5	Write a letter and print it	□Yes □No
6	Create a table in a Word Processor	□Yes □No
System		
7	Turn the computer on	□Yes □No
8	Turn the computer off	□Yes □No
9	Install a new program	□Yes □No
Advanced		
10	Use any programming language	□Yes □No
11	Use Adobe Photoshop or Premiere	□Yes □No
12	Create animations in Flash	□Yes □No
13	Create a database (in Access, or similar)	□Yes □No

Module A5 Questions on Telecenter's operations

Read aloud: I would like to ask you about the telecenter (only to be answerered by people who have interacted with the telecenter as students)

A5. 1 Does the Internet facility work at the telecenter?

1. Yes
2. No

A5. 2 The last time you went to use the telecenter, were you able to use the Internet?

1. Yes
2. No

A5. 3 Did you feel the speed of pages downloading was?

1. Very fast
2. Fast enough
3. Slow
4. Too slow

A5. 3 How many hours a day does the telecenter run?

1. Only as needed by the entrepreneur
2. Mostly closed
3. 1-3 hrs a day
4. 3-7 hrs a day
5. 7-12 hrs a day

A5. 4 If you need to know more about computers (for example, if you wanted to buy one, or send your child to computer education), who would you go to?

1. School teacher
2. Village council member
3. District officer
4. Friend
5. Computer business owner
6. Telecenter entrepreneur
7. Other

A5.5 If equipment repairs are needed the telecenter, do they get done quickly? (will change to more quantitative terms / clearly framed)

1. Always
2. Usually
3. Rarely
4. Never

5. Don't Know

A5.6 Do you think the facility needs physical improvements?

1. Yes
2. No

A5. 7 Do you feel that there are enough teachers at the facility?

1. Yes
2. No

A5. 8 Do you feel that there are enough computers at the facility?

1. Yes
2. No

A5. 9 Do you feel that there are enough software at the facility?

1. Yes
2. No

A5.10 Would you be willing to pay for the improvements of the speed access?

1. Yes
2. No

A5.11 Do you usually make international phone calls?

1. Yes
2. No

A5.12 How much do you spend monthly on international calls?
(Choices…)

A5.13 Have you used a international VoIP phone service at telecenter?

1. Yes
2. No

A5.14 Do you plan to use the VoIP phone service at the telecenter again in the future?

1. Yes
2. No

A5.15 Please tell me something about how has the telecenter helped you to do following activities

Activity	Yes=1

	No=2
Use computer to create a bio-data	
Use internet look for jobs	
Use computer skills to get an office job	
Use computer to access e-government services	
Use computer to do homework for school	
Use computer to read newspapers and magazines	
Use computer to chat or email with people outside the community	
Use computer to create a community newspaper or magazine	
Use computer to write letters to the authorities	

A5.16 Please elaborate on the ways in which the subproject assisted by telecenter has helped you acquire new skills, knowledge, or other abilities:

_____

_____

_____

_____

_____

_____

_____

*****

Focus group:

A5.16 What do you think about computers

How many letters do you mail in a month?

How many community groups are you involved in?
How many hours a week do you spend at meetings or activities of these groups?
How many newspapers do you subscribe to?

Domain Specific
How do you get your information on seeds/fertilizers/fishing (waves)?
How did your father get information on seeds/fertilizers/waves?
Do you see the government's television program with information on seeds/waves?
Who do you sell your crop/fish to? (individual middleman, market etc.)
Will this buyer give you advance payments?
How many times have you had to go to go to the district headquarters this year?