
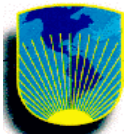


Telecenters for Socioeconomic and Rural Development in Latin America and the Caribbean

Investment Opportunities and Design Recommendations, with special reference to Central America

by

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Executive summary

The Internet is central to the network revolution that is transforming the way people interact all over the world, and the Net has taken Latin America and the Caribbean by storm. The number of domain names in the region doubled in 1997 and 1998 and rose 136% in 1999, compared to 74% in North America, 60% in Asia, 30% in Europe, and 18% in Africa.

The region, however, lags far behind. Its Internet infrastructure represents only 1.6% of the world's total. Only 2% of inhabitants of Latin America and the Caribbean use the Internet, compared to 40% in the United States and 36% in Canada. The countries in Central America have 7% of the population of Latin America and the Caribbean, but only 1% of the domain names, and their presence in the new economy is negligible.

The region's lag is a serious problem, but one that the business sector is addressing forcefully. A far more serious challenge for the region stems from the very nature of the new economy: i) the globalization of markets; ii) the rapid and growing speed with which decisions are made and executed; and iii) the virtually ongoing reorganization of knowledge networks of corporations, governments, and associations. ***In this new environment, the danger of the gap between the rich and poor in the region growing wider is more serious than ever and threatens the economic prosperity, social stability, and very survival of democracy.*** *Measures are needed to give all citizens the opportunity to acquire knowledge, frequently update that knowledge, and become fully engaged members of society.*

This report is part of a combined effort by the Social Programs Division of the Regional Operations Department 2 and the Rural Unit and the Information and Communications Technology Division of the IADB's Sustainable Development Department, to establish or strengthen access to and dissemination of technology for economic and social development.

The Bank and the international community in general have become interested in telecenters as a way to build sensible development strategies, consistent with the situation of poor countries and marginal areas. This strategy holds that there is no point in investing heavily in extending access to those areas, given their limited production capacity and purchasing power, but recognizes the potential impact that increased access could have on their development. "Universal service" to every home is too ambitious a goal in poor countries and low-income areas, but it is possible to have a significant impact through "universal access" by means of shared facilities in a relatively short period of time.

*A telecenter may be defined as a "***shared site that provides public access to information and communications technologies.***" This report focuses on those sites whose* ***main purpose is to increase public access to the Internet and to services available over the Internet.***

This study examines some of the main telecenter experiments in Latin America, with particular reference to Central America and the Caribbean, to help guide IADB actions. In the region, Peru has the most persons who use the Internet from public access points; that country's experience with cabinas públicas is therefore examined at length. As part of the study, visits were conducted to Brazil, Chile, El Salvador, Guatemala, Panama, and Peru. Additional information on experiences in other countries was obtained from secondary sources and through direct communication (via Internet, e-mail, and telephone) with telecenter administrators, specialists, and promoters.

A survey was conducted in 14 cabinas públicas in Peru and completed by a total of 1,752 adult users. Survey results provide a characterization of users, and help identify the main uses of cabi-

nas, the needs, aspirations and achievements of users, and perceived notions as to the quality of service received. A principal finding is that the cabinas studied are in fact benefiting a significant number of low-income users; but that the population served has a substantial stock of human capital. Those cabina users surveyed that are poor, in general have the skills to profit the most from the use of information and communication technologies (ICTs) to escape poverty. The downside of this finding is that the impact of cabinas públicas on poverty is not likely to be broad enough to reach the mass of low-income people with little formal schooling.

The ***basic telecenter*** *that is common in Latin America and the Caribbean, mainly in urban areas, has fairly standard features. It consists of premises stocked with several computer terminals and simple furnishings consisting of chairs or classroom desks for users and regular desks or tables on which the terminals sit. The main service offered to the public is access to the Internet (chatting, e-mail and Web browsing) and often also to elementary software (word processing, spreadsheet). A basic telecenter is easy to install and administer, provided there are no connection difficulties. The cost of a basic center with 14 terminals, for example, may require an investment of $15,000 to $25,000.*

Starting from this basic definition, telecenter types (Table 2) differ in two main respects: i) the way in which their management is organized, and ii) the services offered in addition to access to a computer connected to the Internet. This study categorizes telecenters by management type, given its fundamental impact on telecenter sustainability. A distinction is made among the following types of telecenters: ***commercial***, ***franchise, university, school, NGO-sponsored***, ***municipal,*** *and* ***multipurpose.*** *The study describes how different institutions operate telecenters under each management type and the services they provide, and assesses the potential impact of each telecenter type on a target group comprising low-income people, replicability and self-sustainability.*

Telecenters have the potential to help break down some of the largest barriers to development that are presently faced by low-income populations, particularly in rural areas. Use of a telecenter would enable a rural inhabitant, for example, to gain on-line access to:distant productive assets and services; opportunities to learn better practices through formal and informal sources; to crucial market intelligence through informal networks that enhance bargaining power; to information on projects, financing institutions and options and support for the rural population; to expanded distant job opportunities and telework; and to persons with similar interests willing to work for a common cause.

Establishing telecenters in urban areas or in rural areas with good connectivity does not present any great difficulties. However, ***the lack of broadband telecommunications infrastructure sufficient to connect to the Internet is a major challenge in rural areas.*** *Other factors come into play that further raise investment and operating costs in rural areas (humidity, low skills of client population, lack of technical facilities and staff to maintain equipment).*

Some important features in Central America that affect the development of telecenters in the subregion are: serious deficiencies in its telecommunications infrastructure; the significance of its rural environment (50% as compared with 26% for Latin America); a very young population (60% less than 24 years of age, compared with 50% for Latin America and 36% for the US); a large population residing abroad; and different telecommunications regulatory regimes.

Investment opportunities

Information and communications technology (ICT) projects and components have begun to play an increasing role in IADB operation. Several projects are already financing the establishment of telecenters. This report identifies twelve model interventions recommended for Bank action, categorized by the type of instrument applicable: financial (loans) and non-financial (technical cooperation, studies, bid calls). For some kinds of intervention, concrete examples are available. The other models presented help illustrate potential Bank action. In general, all of the proposals identified are applicable in Central America, but the first four are particularly suited to the subregion. A list of the opportunities identified follows:

	Financial instruments -- loan operations	***Example***
1	*Use of community, social, and productive investment funds to help finance telecenters administered by civil society*	*HO-144*
2	*Agricultural development projects -- development of online agribusiness information systems and telecenters to promote increased access to production information*	*ES-119*
3	*Comprehensive ICT development projects*	*JA-116*
4	*Expansion of rural telecommunications infrastructure*	
5	*Projects to* ***modernize formal education***	
6	*Modernization of the State*	
7	*Municipal decentralization*	
	Nonfinancial instruments	
8	*MIF projects supporting innovative initiatives benefiting crafts associations and micro-producer groups*	
9	*MIF projects to help microfinancing institutions develop telecenters, as an additional service to their clients and to reduce costs by putting some services online*	
10	*Strategic partnerships to promote special telecenter initiatives*	*Youth Program*
11	*Regional technical cooperation to support virtual assistance networks and telecenter initiatives*	*TC-990519-RG*
12	*Studies on best practices and training events*	

Design recommendations

The study's principal recommendations are the following:

<u>Role of Telecenters</u>

i) A telecenter can be a powerful instrument but to be effective it must be part of a comprehensive economic and rural development strategy that includes investment in complementary sectors. Institutional reforms must also be instituted to broaden the work opportuni-

ties and social and economic participation of traditionally excluded sectors of the population.

Rural Connectivity

ii) *Rapid developments in wireless technology have made it possible to overcome physical hurdles (distance, topography), at a reasonable cost, that for long have limited the development of telecommunications infrastructure in rural areas of Latin America and the Caribbean. Investment in this infrastructure The benefits of such investments should be maximized by providing Internet service not just rural telephony. Shared access to these services through telecenters can increase the impact of these interventions. In remote and sparsely populated areas market incentives will often provide insufficient stimulus to private investment* ***and government subsidies will be required.***

Training

iii) *ICT training interventions should be geared primarily towards* ***young people****. The young adapt most quickly and easily and is most skilled at using the new technologies. Since young people are a large group in the region, with the longest productive horizon ahead of them, there is a high return on investments aimed at improving their productive capacity. The starting point should be the strengthening of the* ***formal education system****,* so that it incorporates the effective use of the *new technologies. Teacher training is often a critical determinant of impact on youngsters.* ***Telecenters can be an important complement to formal education reform,*** *providing support to students and teachers after school hours and increasing Internet access for teachers, parents, recent graduates and the community at large.*

iv) *The lack of knowledge about the use of the Internet and computers is not a serious obstacle for young or well-educated adult users. For telecenters that aim to serve traditionally excluded populations, most with little schooling, a training program for novice adult users may be essential.*

Content and Virtual Networks

v) *Priority must be given to launching portals that offer* ***public services online****, aimed primarily at meeting the economic and social needs of the low-income population, including educational portals using simple language that broaden labor and self-employment opportunities.*

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vi) *Public investment in content does not imply public administration. The combination of State investment with private sector development of public information and virtual service systems has as a side advantage the stimulus to the development of an indigenous ICT sector, especially if contracts are awarded to private entities on a merit basis.*

vii) *A link between a telecenter and content development is not always essential. When the user population has a high level of education, the usefulness of State-sponsored portals to support telecenter development is debatable. One advantage of the Internet is precisely that it eliminates physical space as a barrier, and private or State institutions can create useful networks or sites independently of telecenter development. For example, to disseminate technical or market information for small and medium-sized enterprises (SMEs)*

*and the agricultural sector, it is more important to have a **virtual center** (see the Mexican Business Information System – SIEM [SECOFI]) and for **virtual networks** to be established among companies, cooperatives, and other institutions that already have computers or are in a position to acquire them (CONCYT project in Guatemala).*

viii) ***It is the community that should take the initiative and be responsible for maintaining community information systems.*** *The State and the philanthropic sector can help launch these initiatives and even develop portals that enhance the presence in the web of low-income users and small towns and businesses and make the task more user-friendly and economical. The systems developed must be simple, and the requirements for keeping these sites up to date must be consistent with the organizational and financial capacity of the users. Otherwise, there is the risk of spending a lot of money on unsustainable initiatives.*

ix) *Government policies are needed to strengthen the **legal and institutional framework** to foster the development (primarily by private enterprise) of sites and Internet solutions that facilitate e-commerce, particularly by small and micro-entrepreneurs. The lack of secure, on-line payment mechanisms accessible to all types of producers is one obstacle that needs to be overcome with urgency.*

x) *It is important for the State and society to welcome and encourage **virtual activism**, as a means of empowering low-income populations to address their own problems constructively and effectively. This form of activism will develop rapidly as more citizens -- until now bypassed by technology -- gain access to and recognize the power of the Internet to voice their social claims and support their own organizations and initiatives. The main contribution of telecenters might well be an increase in communications and options for interaction and social coordination. Support programs can promote virtual interaction and enhanced productivity, by sponsoring face-to-face meetings between administrators and users with similar problems and interests. They can also finance the development of low-cost tools (software) in the **public domain** to facilitate **virtual** interaction and joint organizational work over the Internet.*

Types of telecenters

xi) ***Commercial telecenters**, as developed by the private sector in Peru (cabinas públicas) and elsewhere (cyber cafés), are excellent vehicles for increasing Internet access. Promoting the spontaneous development of this type of market-based telecenter is a healthy strategy, but requires concerted effort on the part of the government; and the speed with which they emerge depends on specific conditions that are not always in place in the countries. Commercial telecenters have a particularly limited capacity to benefit low-income populations with little education.*

xii) *There are countless successful experiences with telephone franchising, however to date there is very limited experience with commercial telecenter franchsing in an openly competitive framework. Financing and developing a sustainable rural or urban **commercial franchise** model is risky and is up to the private sector, not to public or quasi-public entities run (directly or indirectly) by the State.*

xiii) *Access to computers and the Internet can support efforts to decentralize and strengthen local governments. Municipalities can also promote the development of **municipal telecenters**, to help further local development and enhance civic participation. The key to*

success lies in keeping the operations of the telecenter independent from those of the mayor's office and reducing the potential for political interference by supporting the implementation of telecenters with a sustainable management model. If the municipality has resources, a commitment from local authorities to maintain the center may be sufficient. However in many if not most cases, it is preferable for the private sector to manage the telecenter, to prevent the adoption of pricing practices and operational norms that are detrimental to sound administration and sustainability.

xiv) Other types of telecenters can also help to bridge the digital divide.

- ***University telecenters**, given their link to research activities and centers of excellence, can offer supplemental service, social outreach and develop connectivity, training, content, and virtual networks. If they charge for the services provided and operate in a sustainable manner, University telecenters will also serve as an example to be emulated by other public and private institutions.*

- *Many countries could establish **school** telecenters by outfitting classrooms as student laboratories and opening their doors to the public at the end of the school day. Many more school youths could benefit from a school telecenter than from a university facility; and the closer parent-teacher relationship in schools would enhance community involvement. Having the school system and the community share telecenter costs and equipment would bolster sustainability. Following the example of peruvian university telecenters, school telecenters could charge for services rendered to enhance sustainability.*

- *There is a broad range of **NGO-sponsored telecenters**; most have been positive experiences, but they are difficult to characterize. The most successful initiatives are easy to pinpoint, since they generally share the following traits: i) their sponsorsare quite open and willing to discuss their financial situation, achievements, difficulties, and shortcomings; ii) they promote modern, inexpensive information and communications technology consistent with the payment ability of and potential benefit to the target clientele; iii) their mandate is documented and clearly identifies the direction and current status of the sustainability of operations; iv) all clients, no matter how poor they are, pay for services rendered, even if such payment is in kind; and v) they maintain a decentralized administrative structure, attuned to patrons' needs.*

- *There have been different manifestations of the **multipurpose** telecenter model. From the outset ,and under ITU leadership, their task and main contribution has been experimentation with and development of service and operating alternatives to try to overcome the challenges posed by rural environments.*

xv) More important than type,to be successful in bringing about economic and social development, telecenter initiatives need to:

- *Target a low-income population as (at least part of) its clientele;*

- *Remain strongly committed to self-sustainability and adopt a business model consistent with that commitment; and*

- *Be run by someone that is: personally committed to the project, willing to con-*

tribute his or her own capital and time, backed by the community in which the center operates, willing to address the community's objectives and needs, and be knowledgeable of the initiative's technical and financial requirements.

State Support

xvi) To serve the large masses of poor people whose formal education is generally limited, the State will have to adopt subsidized development interventions.

xvii) State support should adhere to transparent and sustainable institutional formulas:

- *Subsidies for the initial outfitting of the center seem adequate, leaving the operation and maintenance of the telecenters to be provided by telecenter operators.*
- If the State decides to offer users free or highly subsidized service, it must recognize that in so doing it may interfere with the development of private initiative – at least in the area surrounding the telecenter. It is also important for the State to be willing and able to bear the implementation costs in a regular, recurrent basis.
- *In general, it is preferable to introduce (experiment with) a scholarship or voucher system for impoverished sectors, instead of general subsidies for all users.*
- *The success of many **franchises** in different spheres of business – including rural telephony - has been very enticing to the public sector, which is always seeking to make a high impact and visible intervention. In practice, State efforts (either directly or through quasi-public agencies) to promote telecenter development under **public franchise schemes**, tend to undermine local ingenuity and the sustainability of the endeavor and therefore **is not recommended**. Instead, other support formulas that give local administrators full latitude and flexibility in decision making should be used.*
- *In countries where the State has a monopoly on telecommunications, government concessions may be the only alternative for developing telecenters for the low-income population. Entrusting civil society institutions with the management and operation of the telecenters will enhance the likelihood of success.*
- *In general, merit-based systems of support appear to be suitable and transparent means of promoting self-sustainability and innovation in telecenter development.*
- *The two types of merit-based systems considered - **Telecommunications Development Funds and Community Investment Funds -** have yielded good results, and **both are recommended.***

Internet Access and Telecenters in Central America

xviii) Increased Internet access can and should play a vital role in the development of Central America, given the youth of the population and the large number of Central Americans residing abroad and bearing in mind that telecenters are used predominantly for communications – chat and e-mail..

Promoting telecenters in urban and urban outskirt areas

xix) In urban and rural areas with good connectivity, community investment funds, as used in Canada to establish 10,000 telecenters, are a quick, effective way to increase citizens' access to the Internet. In principle, the Social Investment Funds currently operating in most Latin American and Caribbean countries could play an important role in the very short term in developing community telecenters.

Promoting rural telecenters

xx) A program to expand Internet access cannot ignore the traditionally excluded population that resides in rural areas of the region and that make up a quarter of its population (50% in Central America). Furthermore, it is in these areas where poverty is most widespread and deplorable. The main obstacle in many rural areas is the lack of telecommunications infrastructure. To overcome this impediment, special support programs, often requiring State subsidy, will need to be instituted.

xxi) For countries in which the sale of the State owned telecommunications monopoly operator is in the policy agenda (possibly Nicaragua, Honduras, Costa Rica), it is important for the privatization process to: make provisions for a significant expansion in the national telecommunications infrastructure; allow for the expansion of rural infrastructure (including voice and data transmission) in sparsely populated areas, for example, by setting up minimum subsidy tender procedures and allowing the participation of specialized wireless operators (e.g. VSAT, wireless local loop) in service provision; and foster competition among Internet service providers (ISPs) and, as soon as possible, telecommunications companies, thereby - albeit indirectly, but effectively - encourage the expansion of commercial telecenters..

xxii) The development funds used by telecommunications regulatory and promotion agencies in different countries in the region (Chile, Colombia, Perú) are appropriate instruments, particularly to extend access to the Internet in rural areas that require infrastructure investments subject to significant economies of scale. The adaptation of these experiences in Central America and other countries in the region deserve consideration. Bidding formulas should provide for the establishment of telecenters with the capacity for the transmission of voice and data with sufficient bandwith to enable web surfing. Bidders should have the latitude to propose the management formulas they deem appropriate, but a preference for management models that rely on institutions and enterprises in the communities to be served should be stipulated in tender documents.

Bank Instruments and the Development of ICTs

The globalization of markets, the fast and increasing pace at which decisions are being made and executed, and the changing role of leadership in an environment in which operations are being decentralized and knowledge networks constantly reorganized, provide for unprecedented social and economic dynamism. The new setting has led to profound changes in institutional architectures in many firms and civil society organizations. The greatest challenge, however, is to national and international public agencies, because either by tradition or constitution, their administrative and decision-making structures tend to be compartmentalized, dependent on various bodies for approval and con-

trol, and on fairly rigid and complex multilevel hierarchies. These features are not conducive to decentralization, alliance building or rapid response. And, unlike private firms or non-governmental organizations, public agencies may go on for long even as they become increasingly irrelevant.

Information and communications technology (ICT) projects and components have a specific profile that separates them from other kinds of interventions. First, they ***involve many disciplines and sectors****, making coordination and working in multidisciplinary teams necessary, both within the Bank and in the countries. Yet achieving effective coordination through such teams is complex, and determining competencies among institutional bodies is no easy task, even though it is essential. Second, ICT operations have* ***intensive knowledge and technical assistance requirements****, instead of physical and financial capital needs, which traditionally have been most important to the Bank. This shift in emphasis in favor of non-financial instruments makes it indispensable for the Bank to join in partnership with technical cooperation organizations and bilateral agencies, private philanthropic entities, and even civil society organizations. Third,* ***ICT operations need to be prepared swiftly.*** *Technology project designs become outdated very quickly.*

xxiii) The new instruments adopted by the Bank in 2000, innovation loans in particular, should prove helpful in reducing project-processing time. However, if the Bank is to be at the cutting edge, a leader in ICT development throughout the region, more fundamental changes in its instruments and operating procedures are likely to be needed. The changes required would seek to improve the Bank's ability to work effectively with multiple sectors, in partnership with different kinds of public and private institutions and making intensive use of technical assistance inputs, and radically reducing project-processing time. Such changes would enable the IADB to set the standard for public sectors throughout the region, and to make an effective contribution to regional efforts to give ***all peoples of the Americas*** *the opportunity to acquire knowledge, improve their future, and become fully engaged citizens.*

Abbreviations

AHCIET	Asociación Hispanoamericana de Centros de Investigación y Empresas de Telecomunicaciones (Hispanic-American Association of Research Centers and Telecommunications Operators; http://www.ahciet.es/default.htm)
AIRAC	Asociación de Instituciones Rurales de Ahorro y Crédito, Inc. (Dominican Republic)
Amic@s	Aulas Municipales de Información, Comunicación y Aprendizaje (Paraguay)
ANC	Asociación Nacional de Centros de Investigación, Promoción Social y Desarrollo (http://www.anc.org.pe)
APC	Association for Progressive Communications (http://www.apc.org)
BID	Banco Interamericano de Desarrollo (http://www.iadb.org; in English: IADB, Inter-American Development Bank)
BNDES	Banco Nacional de Desenvolvimento Econômico e Social (http://www.bndes.gov.br)
CACI	Centros de Acceso Comunitario a Internet (Colombia, Community Internet Access Center - COMPARTEL; http://www.compartel.gov.co)
CAP	Community Access Program (Canadá; http://cap.ic.gc.ca)
CDI	Comitê para Democratização da Informática (http://www.cdi.org.br/)
CEFODI	Corporación Esmeraldeña para la Formación y el Desarrollo Integral (Ecuador)
CELADE	Centro Latinoamericano y Caribeño de Demografía (http://www.eclac.cl/celade-esp)
CIID	Centro Internacional de Investigaciones para el Desarrollo (http://www.idrc.ca)
CITEL	Comisión Interamericana de Telecomunicaciones (http://www.citel.oas.org)
COMPRANET	Sistema electrónico de contrataciones gubernamentales (México; http://www.compranet.gob.mx)
CONICYT	Consejo Nacional de Ciencia y Tecnología (Chile; http://www.conicyt.cl)
COPRI	Comité de Promoción de Inversión Privada (Perú)
CORFO	Corporación de Fomento de la Producción (Chile; http://www.corfo.cl/index.asp)
CTCNet	Community Technology Centers' Network (http://www.ctcnet.org)
CTN	Canadian Technology Network (http://ctn.nrc.ca)
FAO	Food and Agriculture Organization of the United Nations (http://www.fao.org; en Español: Organización de las Naciones Unidas para la Agricultura y la Alimentación, http://www.fao.org/inicio.htm)

FIS	Fondos de Inversión Social (in English: SIF, Social Investment Funds)
FITEL	Fondo de Inversiones en Telecomunicaciones (Perú; http://www.osiptel.gob.pe/fitel/frames/fr5.html)
FOD	Fundación Omar Dengo (Costa Rica; http://www.fod.ac.cr)
FOMIN	Fondo Multilateral de Inversiones (http://www.iadb.org/mif/index_spa.htm)
FENACOAC	Federación Nacional de Cooperativas de Ahorro y Crédito (Guatemala)
FONDECYT	Fondo Nacional de Desarrollo Científico y Tecnológico (Chile; http://www.conicyt.cl/fondecyt)
FSM	Fundación StarMedia
HONDUTEL	Empresa Hondureña de Telecomunicaciones (http://www.hondutel.hn)
IABIN	Inter-American Biodiversity Information Network (http://www.iabin.org)
IADB	Inter-American Development Bank (http://www.iadb.org; en Español: BID, Banco Interamericano de Desarrollo)
ICT	Information and Communication Technology
IIE - UFRO	Instituto de Informática Educativa – Universidad de la Frontera, Chile (http://www.iie.ufro.cl)
IICD	International Institute for Cooperation and Development (http://www.iicd.org)
IDRC	International Development Research Center (en español, CIID http://www.idrc.ca)
INEI	Instituto Nacional de Estadística e Informática del Perú
IPAT	Instituto Panameño de Turismo (http://www.ipat.gob.pa)
IST	Internet Software Consortium (http://www.ist.org)
ISDN	Integrated Services Digital Network (RDSI in Spanish)
ISP	Internet Service Provider (PSI: Proveedor del Servicio Internet)
ITC	International Telecomputing Consortium (http://www.itc.org)
ITU	International Telecommunications Union (http://www.itu.int; en Español: UIT, Unión Internacional de Telecomunicaciones, http://www.itu.int/index-es.html)
MICT	Ministry of Industry, Commerce and Technology (Jamaica; http://www.mct.gov.jm)
NTCA	National Telephone Cooperative Association (www.ntca.org)
OSIPTEL	Organismo Supervisor de Inversión Privada en Telecomunicaciones (Perú; http://www.osiptel.gob.pe/sobosip/frames/frintro.html)

PNUD	Programa de Naciones Unidas para el Desarrollo (http://www.undp.org)
PSI	Proveedor del Servicio Internet (en inglés, ISP: Internet Service Provider)
RCP	Red Científica Peruana (http://ekeko.rcp.net.pe)
RDSI	Red Digital de Servicios Integrados (ISDN in English)
REUNA	Red Universitaria Nacional (Chile; http://www.reuna.cl/indexf.html)
SAC	Serviço de Atendimento ao Cidadão (en Bahía: http://www.sac.ba.gov.br/pprojeto,html)
SEBRAE	Serviço Brasileiro de Apoio às Micro e Pequenas Empresas (http://www.sebrae.com.br)
SECODAM	Secretaría de Contraloría y Desarrollo Administrativo de México
SECOFI	Secretaría de Comercio y Fomento Industrial (México; http://www.siem.gob.mx/siem2000)
SEMARNAP	Secretaría de Medio Ambiente, Recursos Naturales y Pesca (México; http://www.semarnap.gob.mx)
SENACYT	Secretaría Nacional de Ciencia, Tecnología e Innovación – Panamá (www.senacyt.gob.pa)
SIEM	Sistema de Información Empresarial Mexicano (http://www.siem.gob.mx/siem2000)
SIF	Social Investment Funds (in Spanish: FIS, Fondos de Inversión Social)
SUBTEL	Subsecretaría de Telecomunicaciones (Chile; http://www.subtel.cl)
TEBELA	Telematics Bridge Between Europe and Latin America (http://www.tebela.org)
UCA	Universidad Centroamericana "José Simeón Cañas" - El Salvador (http://www.uca.edu.sv)
UIT	Unión Internacional de Telecomunicaciones (http://www.itu.int/index-es.html; in English: ITU, International Telecommunications Union; http://www.itu.int)
UNDP	United Nations Development Programme (http://www.undp.org)
UNSA	Universidad Nacional de San Agustín (http://www.unsa.edu.pe)
UNSAAC	Universidad Nacional San Antonio Abad del Cusco (http://www.unsaac.edu.pe)
USA-RSA	Universal Service Agency of the Republic of South Africa (http://www.usa.org.za)
USAID	United States Agency for International Development (http://www.info.usaid.gov/)
URL	Uniform Record Locator
UTP	Universidad Tecnológica de Panamá (http://www.utp.ac.pa)

I. Background, Objectives and Scope

1.1 The Setting

The Internet is central to the network revolution that is transforming the way people interact all over the world, and the Net has taken Latin America and the Caribbean by storm. The number of domains in the region doubled in 1997 and 1998, and increased by 136% in 1999, compared to 74% for North America in the same year, 60% for Asia, 30% for Europe, and 18% for Africa [ITU 2000 (a), p. 19].[1]

The region however lags far behind. It accounts for a mere 1.6% of the world's total Internet infrastructure [Arnum 1999 and IST 2000]. Seventy five percent of all web pages are in English compared with only 3% in Spanish and 1% in Portuguese [ITU 2000, p. 23]. And in 1999 only 2% of the population of Latin America and the Caribbean used the Internet compared to 40% in the United States and 36% in Canada (Table 1). The only country in the region with a high rate of use is Bermuda, 39%. It is followed by Uruguay with only 7.6%. The largest numbers of domains are found in Brazil, with 38% of the regional total, Mexico with 35%, and Argentina with 12%, but the proportion of the population using the Net in those same countries ranges between 2.4% and 2.6%.

With its well-developed and reliable banking and payment system and an enormous domestic market that facilitate the establishment of productive networks, Brazil is the regional leader with 88% of Latin America and Caribbean electronic commerce. Mexico is next with about 5% and Argentina with 2% [Stephenson and Ivascanu 1999]. Nevertheless, the region's overall participation in e-commerce is very small. In 1999 North American trade between businesses (B2B) totaled about US$90,000 million and on-line retail sales (B2C) US$20,000 million. The corresponding figures for Latin America were US$1,000 million and US$200 million, respectively.

The regional lag is significant but is being aggressively addressed by the entrepreneurial sector. A far more important challenge to the region is posed by the very nature of the new economy: i) market globalization, ii) the rapidity and increasing speed with which decisions are taken, and iii) the unremitting periodic reorganization of knowledge networks both within and outside corporations, governments and societies [Castells 2000]. **In this new setting the danger of a greater and widening gap between rich and poor in the region is more serious than ever.**

Economic prosperity, social stability and the very survival of democracy in the region make it necessary that all citizens be able to:

i) have the opportunity to acquire and frequently update the knowledge they need to stay productive and compete on a labor market that is increasingly flexible and that, by offering short-term and half-time jobs requiring frequent renewal of qualifications, makes increasing demands on individual initiative; and

ii) be prepared to participate as genuine citizens and feel themselves a part of a technologically sophisticated world instead of alienated from it.

[1] Estimates of the number of domains in individual countries are based on domain names (hosts servers with AP addresses). Domains with ".com" ending are generally associated with US companies, but many such servers are located elsewhere. Estimates of the number of domains with country endings like ar, mx, pe, etc., tend to underestimate the number of domains in any given country to the extent that companies in these countries use the ".com" ending.

Telecenters have aroused the interest of the international community as a means of implementing a judicious development strategy that is in accord with the resource-poor situation of developing countries and marginal areas.[2] The strategy acknowledges that there is no point in investing large sums in providing access to new information technologies to low income areas, given their limited purchasing power and limited capacity to produce wealth, but at the same time recognizes the potential enhancement of those capacities that a significant increase in access could enable. "Universal service" to every household is too ambitious an objective in poor countries and areas, whereas "universal access" through shared resources could be achieved in a relatively short span of time.

1.2 Study Objectives and Scope

This report is part of ongoing efforts by the Social Programs Division of the Bank's Regional Operations Department II "to establish or strengthen the dynamics of access to and diffusion of technology to help further economic and social development" [Sáenz 1997]. The study examines some of the leading experiences with telecenters in Latin America and the Caribbean and elsewhere in the world, to identify recommendations for program design and investment opportunities in the region, with special reference to Central America.[3]

Because of its importance to the region, the Peruvian experience has been studied in greater detail than that of other countries. It is probably in Peru that the largest proportion of users is connected to the Internet from public access points [see IDC 1999] [Fernández-Maldonado2000, p. 2]. Many of these do so from *cabinas públicas*. Apart from its impact on access, the Peruvian experience is important for another remarkable reason: the *cabinas publicas* service has been developed entirely by private enterprise - civil society and small private businesses - without any government subsidy to speak of. Most *cabinas públicas* pay their own way.

The study included travel to Peru (February 13-21, 2000), Panama (February 21-23), El Salvador (February 23-24), Guatemala (February 24-29), Brazil (São Paulo, June 23-25) and Chile (June 25-July 1). The information obtained in these countries and from secondary sources has been complemented by a survey of users of 14 *cabinas públicas* in Peru.

[2] [Colle and Román 1999] review telecenter development efforts by the leading international agencies.

[3] For purposes of this report "Central America" includes Belize and Panama in addition to Costa Rica, El Salvador, Honduras, Guatemala and Nicaragua.

Table 1. Telecommunications Indicators 1999

	Country / Region	Population (in millions)	Per capita GDP (US$)	Fixed telephone lines		Cellular subscribers		Internet users	
				Total (ooo)	per 100 people	No. of subscribers in ooo	per 100 people	Number of users (000)	% of population
1	Belize	0.24	2'558	31.6	13.75	3.4	1	10	4.3
2	Costa Rica	3.93	2'763	802.6	20.41	143.0	3.64	150	3.9
3	El Salvador	6.15	1'984	468.1	7.61	382.6	6	40	0.7
4	Guatemala	11.09	1'754	605.3	5.46	351.2	3.17	65	0.6
5	Honduras	6.32	859	279.2	4	78.6	1.24	20	0.3
6	Nicaragua	4.94	452	140.0	2.98	69.0	1.40	20	0.4
7	Panama	2.81	3'305	462.5	16	242.0	8.61	45	1.6
	Central America	**35.47**	**1'694**	**2'789.2**	**7.86**	**1'269.8**	**3.58**	**350.0**	**1.0**
8	Mexico	97.37	4'330	10'926.8	11.22	7'621.6	7.83	2'453	2.6
9	Bermuda	0.06	33'469	53.7	83.95	12.6	19.64	25	39.1
10	Canada	30.49	19'962	19'206.0	63.50	5'320.	17.59	11'000	36.3
11	EE UU	276.22	32'198	179'822.1	66.10	85'018.5	30.78	110'000	40.7
	Bermuda, Canada, US	**306.77**	**30'975**	**199'081.9**	**65.84**	**90'351.0**	**29.48**	**121'025**	**40.2**
12	Argentina	36.58	8'257	7'356.8	20.11	2'530.0	7.00	900	2.5
13	Bolivia	8.14	1'077	471.9	5.80	401.7	4.93	35	0.4
14	Brasil	167.99	4'675	24'985.0	14.87	15'032.7	8.95	4'000	2.4
15	Chile	15.02	4'921	2'753.0	18.57	964.3	6.50	625	4.2
16	Colombia	41.56	2'844	6'665.4	16.04	3'133.7	7.54	600	1.6
17	Ecuador	12.41	1'620	1'129.5	9.10	383.2	3.09	20	0.2
18	French Guiana	0.02	...	49.2	28.26	18.0	10.34	2	1.2
19	Guyana	0.86	881	64.0	7.49	1.5	0.17	3	0.4
20	Paraguay	5.36	1'646	297.O	5.54	435.6	8.13	20	0.4
21	Peru	25.23	2'530	1'688.6	6.69	990.0	3.92	389	1.5
22	Suriname	0.42	1'976	70.8	17.05	17.5	4.21		0.0
23	Uruguay	3.31	6'335	896.8	27.07	316.1	9.54	250	7.6
24	Venezuela	23.71	4'088	2'585.9	10.91	3'400.3	14.34	400	1.7
	South America	**340.75**	**4'425**	**49'014.1**	**14.39**	**27'624.5**	**8.12**	**7'244**	**2.2**
25	Antigua and Barbuda	0.07	8'266	34.0	46.80	1.5	2.06	4	5.5
26	Aruba	0.10	17'109	33.2	36.69	5.4	5.72	4	4.3
27	Bahamas	0.30	11'001	111.2	36.90	15.9	5.28	12	4.1
28	Barbados	0.27	8'731	113.0	42.18	110.0	4.48	6	2.2
29	Cuba	11.16	1'329	433.8	3.89	5.1	0.05	60	0.5
30	Dominica	0.08	3'236	18.7	25.23	0.7	0.86	2	2.6
31	Dominican Republic	8.36	1'925	763.9	9.28	255.9	3.11	25	0.3
32	Grenada	0.09	3'635	27.5	29.78	1.4	1.53	2	1.9
33	Guadeloupe	O.45	8'509	201.0	44.69	88.1	19.59	4	0.9
34	Haiti	8.09	452	60.0	0.80			6	0.1
35	Jamaica	2.56	2'707	474.0	18.68	79.0	3.11	60	2.4
36	Martinique	0.39	10'747	171.9	43.82	102.0	26.00	5	1.3
37	Dutch Antilles	0.21	...	75.9	36.59	16.0	7.52	2	0.9
38	Puerto Rico	3.89	9'020	1'261.7	32.69	580.0	15.03	110	2.9
39	St. Kitts and Nevis	0.04	6'840	17.2	43.82	0.4	1.13	2	4.9
40	Saint. Lucia	0.15	3'815	40.4	26.57	1.9	1.25	5	3.4
41	St. Vincent	0.11	2'824	21.0	18.79	0.6	0.67	2	1.8
42	Trinidad and Tobago	1.29	4'726	264.1	20.58	26.3	2.05	25	1.9
43	Virgin Islands (US)	O.12	...	64.9	54.82	25.0	21.13	12	11.1
	Caribbean	**37.74**	**2'683**	**4'187.3**	**11.34**	**1'217.4**	**3.30**	**348**	**0.9**
	The Americas	**818.11**	**14'228**	**265'999.3**	**32.74**	**128'084.2**	**15.69**	**131'240**	**16.4**

Source: "America Telecommunication Indicators 2000" ITU (Internet host data. Internet Software Consortium, RIPE).

II. Analytical Framework

2.1 The Concept

Colle and Roman have identified 30 different terms that have been used to refer to various types of information and communication centers.[4] The common feature is that of **"shared premises where the public can access information and communication technologies"** [Colle and Roman 1999, p. 1]. This report focuses on those centers **the primary purpose of which is to increase public access to the Internet and to the services available through the Net.**[5]

2.2 Potential Development Impact

A telecenter can potentially help break down some of the major barriers to development that are presently faced by low-income populations. Barton and Bear [1999] describe the opportunities opened up by these new technologies for improving the productivity of small and intermediate-scale enterprises. Gligo-Sáenz [2000] analyzes in detail the promising prospects held out by the Internet to these small and intermediate enterprises and the difficulties in the way of the realization of these promises. Fernández-Maldonado [1999] documents how *cabinas públicas* in Peru have opened a window of opportunity through the Internet, to the great majority of inhabitants in the capital city.

The Internet could **potentially** have an even greater impact on rural areas and their many impoverished inhabitants.

De Janvry and Sadoulet [2000, pp. 6-7] highlight three causes of rural poverty:

i) **Lack of access to assets** (natural, physical, financial, human and social capital) is a major constraint to rural development.

ii) The value of assets for a low-income population is largely determined by their living surroundings. In the case of financial markets, for example, the costs of **obtaining and maintaining up to date reliable information** for the supervision of loans in remote rural areas with thin and scattered populations are very high, and frustrate the emergence of rural financial institutions [Wenner and Proenza 2000]. Similarly, small farmers tend to be in a weak bargaining position vis-à-vis the intermediary who buys crops at the farm gate, especially when alternative

[4] The first telecenters sprang up in the eighties in the Nordic countries, particularly in Denmark, as government projects to promote experimentation in and learning with new information technologies by persons who would ordinarily have no access to them, farmers in particular. These telecenters focused more on computer and on-line services than on telephony. Later they spread through Europe, North America and Australia. [Benjamin 2000] provides a thorough review of the literature on telecenters. [Norton *et al.*] contains numerous sources and tie-ins, plus an appendix (4) with 10 different definitions of a "telecenter."

[5] Hudson [1999] specifies two criteria that, in her view, a telecenter must meet: i) it must give access to telecommunication services (if there is no "tele" it is not a center), and ii) it must be open to the public at large (that is, its target population must not be restricted to, for example, "children"). The IDRC program for Africa, Acacia, defines a telecenter as a location which facilitates and encourages the provision of a wide variety of public and private information-based goods and services, and which supports local economic or social development.

The definition of a telecenter used here is less restrictive than Hudson's and closer to the one proposed by Acacia, because some NGOs have concentrated on bringing the Internet precisely to those disadvantaged groups that are of interest to this study. The definition used includes cybercafés and *cabinas públicas* on the premise that the access provided by these types of centers, although, as shown later on, is insufficient to further the development of traditionally marginalized populations, it nevertheless constitutes a necessary condition to advance their development.

sales outlets and up-to-date information on prices in neighboring markets are unavailable.

iii) Off-farm pursuits are an important source of income for the rural population. The landless rural poor in particular are highly dependent on off-farm income, especially on non-agricultural, employment. Nevertheless off-farm work opportunities are limited and those that exist are poorly remunerated, because of both **lack of access to high-productivity labor markets** and **lack of access to educational services** that would enable the rural poor to increase their productivity.

In principle, a telecenter would enable a poor campesino man or woman to surmount these limitations by, for example, gaining access to:

government services such as on-line technical or educational assistance or health care;

production information generated by specialized institutions, or informally from other farmers working in similar conditions but more productively;

input and product markets;

information on projects, alternative financing arrangements and financial institutions, and opportunities for farmer support;

distant labor markets and tele-work from a current rural location;

persons with kindred interests prepared to work for a common cause (either economic, such as an exportat cooperative; social, such as a mothers' club; or political, such as a group for the defense of interests of indigenous populations), and

relatives and friends - of long standing or recently acquired - residing at distant locations but enabled by virtual proximity to provide technical, material, cultural, social or moral support.[6]

The evidentiary record of the benefits derived by poor people from the Internet is expanding rapidly,[7] but the documentation of the impact of telecenters on economic and social development is limited and not very systematic.[8] There are many underlying reasons, but this is partly because the causal sequence from use to impact is complex and indirect (adapted from [Benjamin 2000]).

[6] Richardson [1998] supplies a description of the steps for setting up a virtual agricultural research and extension communication network, and Richardson [1999] broadens the discussion by highlighting the potential of the Internet for rural development.

[7] See, for example, the case of Marco Antonio Mamani, an artisan of Cuzco, narrated in [Fernández 2000, p. B3), whose simple web page, set up with the support of the Peruvian Scientific Network (Red Científica Peruana) enabled him to weather the difficult period of civil unrest and a slowdown in tourism to Peru (Mamani's page may be found at: http://www.unsaac.edu.pe/cusco/turismo/artesanias/ocarinas/). According to the *Washington Post* [2000, p. 1], the Ashaninkas' web page set up with the help of the RCP, (http://ekeko/rcp/net.pe/ashaninka/), enabled that indigenous community to increase its income by 10%.

[8] "Despite euphoria over ICTs and development, little is known today about the role of telecenters in social development." Paraphrased from [Gómez, Hunt and Lamoureux 1999b, p. 16].

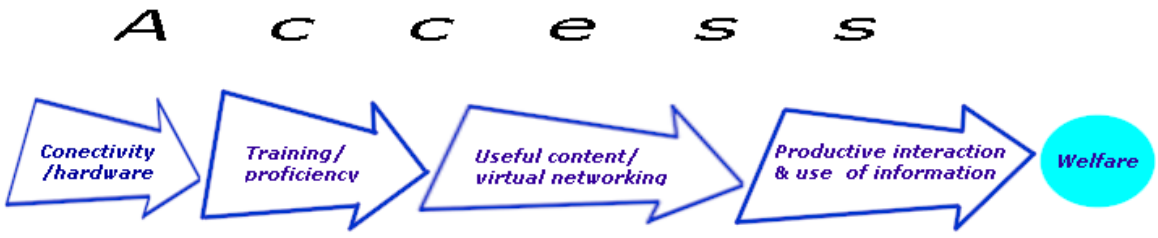

Figure 1

The first step is to give the population access to the Internet through a telecenter. Henceforth the user - usually a poor person of humble origins and little schooling - has to learn how to use the equipment for communication or to look for and find on the Internet services that are of interest to him, in his own language, and in clear and simple text that he can understand and use easily and to his advantage. The final step presupposes that these services actually do enhance the well-being of the user and that of his family economically, socially or culturally. Multiple external factors affect the outcome: the user's prior schooling, his nutritional status and skills; the transportation, energy and commercial infrastructure; political, economic and social stability; the variety and productivity of the local natural resources; policies, and complementary services for support. It is not just that the sequence is complex, but that any break in the chain (a computer breakdown, or a drought or hurricane that destroys assets and crops) can invalidate the effort. Moreover, the measurement of impact is in and of itself a complex undertaking [Gómez, Hunt and Lamoureux, 1999].

Failure to measure impacts has not stopped the development of the Internet or of e-trade, nor has it checked the voracious demand for communication and connectivity through the Internet that has given rise to a proliferation of cybercafes and *cabinas públicas* throughout the region. Nor has there been any flagging of enthusiasm on the part of governments and donors to finance different kinds of telecenters. Countries as diverse as Canada, Chile, Costa Rica, El Salvador, Panama, the United States, Uruguay and South Africa have realized that in order to keep their economies growing and competitive and generating welfare for all citizens and help preserve democratic stability in the age of knowledge concrete measures are needed to close the gap between rich and poor or to prevent it from widening.[9] The strategies adopted have several elements in common, and invariably include the establishment of telecenters.

It is nevertheless essential to recognize that **a telecenter can be a potent tool, but that in order to have an impact on peoples' lives it must be part of an integral strategy of economic and rural development**. A telecenter can provide access to the wide range of opportunities available through the Net, but the result will not be worthwhile without parallel investments in education, health, transportation, energy and public services. Finding new distant market opportunities will be useless if the farmer is sick or is hindered by cumbersome export procedures or has to transport his products over practically impassable roads.

Furthermore, to enhance effectiveness, efforts to promote telecenter development need **to identify telecenter models that are likely to survive beyond a pilot stage, as well as economically sensible formulas of donor support.**

[9] For those that doubt the projected benefits of networking for development, we hope to raise awareness of the dangers and threats in the coming period. A reluctant policy response to the networking revolution will further widen the development gap. An inappropriate mix of policies may significantly widen internal inequalities within a developing country. [Analysis, Inc. 2000], page vi.

2.3 Desirable Features

Although impact may be hard to assess, it is possible to specify in advance criteria that a telecenter needs to meet if it is to contribute to economic and social development, and then compare the available information with the degree to which different types of telecenter are able to fulfill them.

Impact on Low-income Users

To improve the welfare of low income users, a telecenter must provide services that

i) enable **access** to the new information and communication technologies by a low income target population. It is not only important that most of the telecenter users be poor (**amplitude**), it is also desirable that the center assist persons living in extreme poverty or indigence or bereft of skills (**depth**).

ii) **are valued by the target group**, for otherwise it will fail to keep them as patrons for a sufficient period of time to effect a change in their lives, and

iii) bring about concrete economic, social or cultural benefits and actually **improve the living conditions of the target group**.

Replicability

The feasibility of reproducing the experience on a large-scale requires that the telecenter model be relatively easy to adapt to a wide range of conditions.

Sustainability

The main challenge presently facing the development of telecenters is the uncertain sustainability of many of the experiences currently under way. Qvortrup [1995] notes that 70% of the first wave of telecenters set up in Europe failed in the first two years of operation. A 1998 survey in the United Kingdom and Ireland found the number of profitable telecenters to be twice as many as in an earlier (in 1994) survey, but, still, only 26.8% of the telecenters were generating surpluses, 39% were barely breaking even, and 34.1% were operating at a loss [Murray and Cornford]. [10]

In Mexico, of seven telecenters set up in the Federal District in mid-1997, only three were operating a year later, and of sixteen opened in the states of Mexico and Michoacán towards the end of 1997, only three were still operating in mid-1998 [Robinson 1998]. The reasons for the failures were diverse, but financial difficulties and lack of a sustainable management model played a prominent role. Even experiences viewed as successful in their initial phases, as in the case of Amic@as in Paraguay, consistently find their survival jeopardized by budgetary difficulties [Fontaine 1999, p. 20].

[10] Two other notable findings of this study were: i) that 88% of the telecenters surveyed were located in rural settings, and ii) that whereas in 1994 fewer than half of the centers provided access to the Internet, by 1998 all of the centers surveyed did provide such access and 88% had their own web pages.

It is not essential that a telecenter be able to pay for itself so long as government is willing and able to shoulder part of its costs. For example, in 1998 about 30% of the tele*cabinas* and telecenters in the United Kingdom and Ireland were privately owned, another 30% were sponsored by the government, and the remaining 40% were a combination of public-cooperative-volunteer arrangements [Murray and Cornford].

It has been suggested that it is unnecessary for telecenters be self-sustaining if they **are purposefully set up** not for their own sake, but rather to trigger socioeconomic development based on the knowledge economy [Fuchs 1999, Norton 2000]. According to this view, a telecenter need not last long if its establishment brings about enough self-sustaining economic activity based on communication and information methods that were not previously in use. This approach is not necessary wrong, but it does greatly complicate the evaluation, both *a priori* and *ex post*, of telecenter development programs.

In practice most telecenter initiatives are proposed in the expectation of an indefinite lifetime, and involve the investment of sizable sums consistent with this long-term perspective. When such ventures fail, the loss of resources and - perhaps most importantly - the loss in credibility resulting from a missed opportunity to bring about significant change in human development is very harmful. Thus, when a long term institutional view is dominant, the least that can be required of a publicly sponsored telecenter development program is that each center generates enough revenue to cover ordinary operations (operational sustainability) and hopefully also enough to enable the gradual replacement of equipment and other capital assets (financial or full sustainability).

2.4 The Rural Challenge

Setting up telecenters in cities and their vicinity pose no major problems. Equipment needs to be acquired, computers need to be connected to the telecommunications system, operators and managers need to be trained in fairly simple tasks, and a sound business plan is needed to make the telecenter self-sustaining. The establishment of a telecenter serving sparsely populated rural areas with limited transportation options and lacking telecommunications and energy infrastructure presents a far greater challenge.

Choice of energy source, connectivity and telecommunications technology are straightforward tasks for an urban telecenter; only connectivity options need to be considered and these are determined by weighing the costs and benefits of the alternatives offered by the telecom operator. In areas with no electricity this needs to be provided prior to or in conjunction with telecenter development [OnSat.net 2000]. In many other areas lack of telecommunications infrastructure is the main challenge. Lack of infrastructure has prevented connection through a dedicated line and has forced the AEDES telecenter in Cotahuasi, Peru, to depend on a single telephone line that often implies high long-distance charges, narrow bandwidth, and frequent interruptions in service. Similarly, in Mexico, an attempt to set up 17 rural telecenters was beset with connection problems. Only the three centers with local telephone connections were able to function, while the others requiring long-distance connections at prohibitive costs were unable to get off the ground [Robinson, p. 5].

Other factors further raise installation costs in rural areas. For the equipment to operate properly the premises must be conditioned for appropriate humidity, temperature and indoor ventilation. Sanitary facilities usually have to be installed for the users. Deficiencies in the rural power supply make additional devices necessary, such as voltage stabilizers, surge suppressors, backup power supplies, shock protection, and grounding. It is usually necessary to redesign and install new wiring, panel boards and the connection to the power main line. Where no electricity is available re-

course must be had to non-conventional solutions such as solar or wind energy, which add to the costs of establishment.

Operating costs are also higher in rural areas. Telecommunications cost much more, computer equipment maintenance is hard to find and expensive, and skilled operating and maintenance personnel are practically nonexistent.

Rural telecenter users are different from those in urban centers. The earning capacity of the rural population is low, which limits its ability to provide for the costs of operating rural telecenters. In addition, users in rural areas have never sat down to a computer before, know little about traditional information search methods (owing to a lack of rural libraries), have little schooling, and have no idea of the Internet or of e-mail. There are generally no schools that might teach them the rudiments of computers, much less about networks and the Internet. There is no culture of research or information searching. Many rural schools have no libraries or reference materials with which the pupils could develop the reading habit and interests in different subjects. Newspapers and magazines are unknown or uncommon. In this context, "one of the principal dangers in the development of telecenters is that the technology may remain alien to the local community..." [Anderson *et al.*, p. 4].

It is not easy to achieve a sustainably profitable rate of use of equipment in sparsely populated rural areas. An urban telecenter is easily reached by its clientele, through own means or using public transportation. Rural residents however may have to travel many kilometers, often through rugged terrain and poor roads, walking or using limited public transportation services. An urban telecenter might easily occupy 15 to 20 terminals at 60-70% rate of utilization. On the other hand, a telecenter aiming to serve a small town of say 1,000 people will be able to use fewer terminals and have therefore a limited revenue generating capacity, notwithstanding the higher investment and operating costs it faces.

III. Telecenter Typology and Experiences

3.1 Introduction

The **basic telecenter** that is common in Latin America and the Caribbean, mainly in urban areas, has fairly standard features. It consists of premises stocked with several computer terminals[11] and simple furnishings consisting of chairs or classroom desks for users and regular desks or tables on which the terminals sit. The main service offered to the public is access to the Internet (chatting, e-mail and browsing) and often also to elementary software (word processing, spreadsheet).[12] Administrative and support staff oversee the use of the machines, collect payment for the services, and provide rudimentary technical support to the users. Connection to the Internet is preferably over a dedicated 64 Kbps transmission line, but at small telecenters and in small towns the only option may be dial-up service at low transmission rates (e.g. 28 Kbps).

Starting from this basic definition, telecenters types (Table 2) differ in two main respects: i) the way in which their management is organized, and ii) the services offered in addition to a computer connected to the Internet. The classification used here is based on the first of these two features owing to its crucial importance for sustainability.[13] The following types are considered: **commercial, franchise, university, school, NGO-sponsored, municipal, and multipurpose**. The second part of this chapter gives examples of the way some institutions are operating telecenters in the region under each of these management arrangements. The chapter closes with a summary assessment of the potential impact of each telecenter type on the target group, replicability and self-sustainability.

3.2 Commercial Telecenters - the Peruvian Experience

The **commercial telecenter** is the basic privately operated and managed telecenter. This applies to most of the *cabinas públicas* in Peru and probably most of the 150 cybercafés in Mexico [Gómez Mont 1999, p.5], 700 "locutorios" in Argentina [Lama 1999], and outlets offering public access to the Internet in practically all countries in the region. In some cybercafes the "café" aspect predominates over the "cyber," but, except in tourist areas, Internet connection is the main product and food and drinks are only secondary complementary services.

The first *cabina* was installed by the *Red Científica Peruana* (RCP) in May 1995 [Fernández-Maldonado 1999, p. 12], and the number has rapidly multiplied since. Kunigami [2000, p. 5] estimates a total of 580 *cabinas* (February 2000), but Fernández-Maldonado [2000b] and Lama [1999] place the number at about 1,000, especially if Lima's many small kiosks are counted.

[11] In practice, there can be as few as one terminal, as is the case of the South African minicenter or the first 2 pilot telecenters in Cunco, Chile.

[12] The basic service comprises the use of a computer and access to the Internet either to chat, send and receive e-mail, or browse the Internet. Generally the hourly rate is the same whether the user connects to the Net or merely uses the computer off-line.

[13] The classification used is an expanded and adjusted version of the one proposed by Gómez, Hunt and Lamoureux [1999a].

Table 2. Schematic Classification of Telecenters

Prototype	Services	Management-Administration	Examples
Commercial	The basic service is computer plus Internet connection. Called a cybercafé when a cafeteria or bar is present, but these other services generate only a small part of the income (<20%).	Private business	Public cabinas in Peru. (http://www.bk.tudelft.nl/users/fernande/internet/Newcast.pdf); cybercafés in Latin America.
Franchise	Seeks to stand out by improved quality, faster connection, more and better services, atmosphere and comfort.	Private business	RCP proposal for Peru and El Salvador (http://ekeko.rcp.net.pe/rcp/servicios/cabina/)/ TeltecGlobal in Vietnam and Uganda.
NGO	Wide diversity of services, orientation, and target group, depending on location and orientation of promoting institution. Services include Internet combined with training and development activities. Hours of Internet may be subordinated to use of machines for other uses by NGO staff.	NGO or development project (dependent on grants from private businesses for initial computers and software).	CDI (http://www.cdi.org.br/) en Brasil. El Encuentro - Chile (http://www.elencuentro.cl/), Unidades Informativas Barriales - Colombia (http://www.colnodo.org.co/uib/); Lincos in Costa Rica (http://www.lincos.net/); AEDES in Cotahuasi, Perú.
University	Many terminals (30 to 100) mainly for students but also available to general public. Specialized technical support available. Academic courses in computers and preparation of contents easy to organize.	University	Universidad Nacional San Agustín (UNSA), Universidad San Antonio Abad del Cusco (UNSAAC)
School	The school opens its doors to the community after class hours. Services tend to be many and varied (Internet, e-mail, content preparation).	School	Leo Usak - Artico canadiense (http://www.arctic.ca/LUS/Computer_Program.html); / ITC project in China (http://www.itc.org/international.html)
Municipal	In principle, can include a wide range of services (public and private).	Municipal government directly, in partnership with other entities, or entrusted to private enterprise	Infoplazas in Pedací and Penonomé in Panamá. / Villanet in Villa El Salvador in Perú / Amic@s in Paraguay (http://198.6.250.9/inet99/proceedings/3n/3n_1.htm)
Multipurpose	Rural: Access to Internet, e-mail and related services. Commer ial web hosting to community, telephone booths, sales of working materials and stationery, internet café, training courses.	Administrative board representing donors, service suppliers and community members.	Valle de Angels and Santa Lucía (http://www.itu.hn/CPT/); Nakaseke - Uganda (http://www.nakaseke.or.ug/)
	Citizens Service Centers (SAC) in Bahia and other states of Brazil, focusing on services to public (so far without access to the Internet).	State government	State of Bahia (http://www.sac.ba.gov.br/pprojeto,html)

Peru's *cabinas* have gained international recognition and some countries have wanted to follow the Peruvian model as an example.[14] It is essentially an urban experience and to some extent has been replicated in other cities of the region, where *cabinas* are more commonly known as "cybercafés." It is noteworthy, however, that not many telecenters are seen in cities such as São Paulo and Santiago, Chile, whose large populations with limited access to the Internet could theoretically benefit from shared-access facilities. To better understand the determinants and identify the salient aspects of policy and promotion for possible application in other countries, it is important to understand how, and under what set of conditions, the spread of *cabinas públicas* took place in Peru.

Market Demand

The communications options open to Peru's population are very limited. In 1999 there were 6.7 telephones for every 100 inhabitants (Table 1), a figure far below those of other populous countries in the region but comparable with those of the poorer countries in South America (5.5 in Paraguay, and 5.8 in Bolivia) and Central America (7.6 in El Salvador, 4 in Honduras, and 3 in Nicaragua). The options for poor Peruvians are even more limited (Table 3).

Table 3. Selected characteristics of different socioeconomic strata of Peru's population - 1999

Characteristic	Unit	Total	Socioeconomic strata				
			A	B	C	D	E
Number of people	000	25,466	297	2,191	6,873	8,986	7,119
	%	100	1.2	8.6	27.0	35.3	28.0
Number of households	000	5,229	72.3	487.3	1,404	1,817	1,449
	%	100	1.4	9.3	26.8	34.8	27.7
Heads of household with high school	%	59	100	99	83	51	11
Heads of household with university education	%	13	90	63	14	1	-
Heads of households working independently	%	65	25	41	53	74	84
Heads of households working in formal sector	%	52	94	91	70	43	21
Monthly average family income	US$	307	2,956	680	289	199	126
Monthly average family income > US$ 300	%	24	100	76	32	10	2
Computer ownership	%	7	82	26	7	1	-
Telephone ownership	%	33	96	89	52	14	2

Source: Apoyo (http://www.apoyo.com/NEWPortal/opinion/nse_cuadros_peru.htm)

As in other countries, the Internet is used in Peru mainly as a means of communication: e-mail, chatting and, recently and increasingly, Internet telephony.[15] Information searches are popular, but in most cases a secondary pursuit.[16] Public *cabinas* have essentially given access to Peru's low-income urban population a new low-cost means of communication.

[14] The Infocentros project in El Salvador, for example, commissioned advisory services from the RCP to help set up its own program. According to Lama [1999], the RCP was also negotiating a similar agreement with the government of the Congo.

[15] Of a total of 96 users of two *cabinas* at Villa El Salvador interviewed by Nagaro [1999, p. 19] in January 1999, 43% said they used the chat rooms or the Internet (in more or less equal parts). Of 104 users interviewed in the vicinity of 3 *cabina* centers in Avenida Wilson, 41% said they used chat rooms or e-trade.

[16] This concentration by users on e-mail and chatting at access points (both cybercafés and *cabinas*) is sometimes disparaged as a "pastime" of limited social value [Gómez 2000]. This criticism has merit, but the other side of the headlong spread of communication via the Internet is well stated by Gómez-Mont [1999, p. 1): "to understand the growth of the Internet in Latin America it is important to start with a serious problem: the lack of communication there has always been among the peoples of the Americas despite the fact that most of their inhabitants share a common language and the same economic and social problems."

Most *cabinas* are in Lima, where one third of the country's population resides (including the aggregate conurbation: 6,321,200 in 1993). But *cabinas* are found everywhere in the country, wherever the requisite telecommunications infrastructure is in place. In Arequipa (pop.: 642,500 in 1993) the *cabina* operators themselves estimate that there are some 50 to 60 *cabinas*. In Cuzco (pop.: 257,500 in 1993) there may be 25-30. There are *cabinas* in such small towns as Cajamarca (pop.: 101,600 in 1993) and Pisac, and even in Cotahuasi, in La Unión, Arequipa, one of the most remote areas of the country, an NGO has installed a *cabina*.

Evolution and Determinants of Telecenter Supply Response

The Peruvian experience has unfolded in two stages: the first one prior to development of the telecommunications infrastructure, followed by the second stage of proliferation of *cabinas*.

Trained Professionals and a Sizeable and Enterprising Informal Sector

Shortly after its establishment in 1991, The *Red Científica Peruana* (RCP) played a dominant role in the pioneer stage of Internet development. The RCP started out as a consortium of academic institutions and nongovernmental organizations that were both owners and partners in the Network. The RCP was the sole Internet service provider (ISP) in this first stage. It promoted the democratization of Internet use, while the universities contributed to the development process by training many engineers and professionals. RCP's training "nodes" enabled many young, recent graduate engineers and technicians to recognize the importance and potential of the new medium.

Peru thriving informal sector is perhaps the world's largest and, according to Apoyo (Table 3), employs 48% of all heads of household. Little by little young professionals and engineers set up small computer service businesses along Wilson Avenue in Lima, an area known as Peru's "Silicon Valley."[17] The growth of Wilson made components, repair services and illegal (pirated) software readily and cheaply available. It thus became easy for a young entrepreneur to open his own *cabina,* sometimes after learning the business as an employee in someone else's *cabina*.

Infrastructure, Privatization, Market Liberalization and Competition

It is difficult to say exactly when the second stage began, but just about the time that Netscape's Navigator browser appeared in 1994 and enterprises like Amazon, Dell and Cisco were demonstrating the commercial potential of the Internet (WWW), Peru privatized its telephone services (1994) and merged (1995) the government enterprises CPT and ENTEL into a new institution with a substantial infusion of capital from the Spanish firm Telefónica.

Until August 1, 1998, the country's local and long-distance telephone services operated on an arrangement of "limited competition" [COPRI 1999, OSIPTEL 2000]. From the time of its entry on the Peruvian market, and in compliance with its contractual obligation, Telefónica invested heavily in telecommunications development.

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[17] Wilson runs between "blocks 11 and 8 of Garcilazo de la Vega (formerly Wilson) Avenue, and contains dozens of computer and software shops employing thousands of persons..."[Nagaro 1999, p. 13].

"Wilson is the place where all kinds of hardware and software is on offer, in addition to information services of every kind. All of it within the parameters of the informal, submerged economy. There we find the latest models of computer components and accessories (hardware) and applications (software), as well as related and complementary services (from courses in the different applications to the leasing of computers and equipment for a variety of purposes)..." {Nagaro 1999, p. 3].

The significant expansion in telecommunications infrastructure that ensued engendered numerous competitors for the Internet end user; at one time there were more than 50 ISPs.[18] Intense competition for end users resulted in an appreciable lowering of the prices of connection to the Net [Fernández-Maldonado 2000 (a)].[19] The total number of Internet users (including those who access the Internet through *cabinas*) increased from 208,200 at the start of 1998 to 500,000 at the close of 1999.[20]

The drop in connection prices opened up fresh avenues for quick profits in the *cabina* business. Large numbers of persons who, though enterprising and technically prepared faced very limited prospects for well-paid employment, rapidly entered the field. It was at the end of this second stage (1998-2000) that the number of *cabinas* in operation literally exploded.[21]

High cost of individual access relative to income

The **urban** poor have benefited to some extent from the expansion of fixed telephone service in these years (Table 4). Nevertheless, compared with other countries in the region, **individual** access to the Internet has remained an unaffordable luxury for the average Peruvian (Table 5).

Competition among *cabinas* has made the Internet increasingly affordable. In 1995, the first RCP *cabina* was charging US$15/month for a limited number of hours and a restricted use schedule. In January 1999, *cabina* time cost an average of S/5 (US$1.40) per hour, with access to all computer and Internet tools. One year later (February 2000) that rate had dropped to S/2..5-3, equivalent to US$0.70-0.85. This drastic reduction came about precisely as a result of the intense competition that rages among *cabinas*, at least in Lima and the provincial capitals. In Urubamba, where a lone *cabina* operates without competitors, the charge per hour remains a relatively high S/7 per hour.

By 1998 access to the Internet through *cabinas* was more affordable for the average Peruvian than through an individual connection. The cost for 20 hours a month of individual dial-up service was US$40.45, equivalent to about 10% of the national average per capita monthly income (Table 5), not counting the significant investments associated with the purchase of a computer and telephone installation. In contrast, 20 hours of Internet access through a *cabina* amounted in 1998 to only US$ 28, or about 7% of monthly per capita income, and to US$ 14 or 4% of monthly income at 2000 prices.[22]

[18] According to Kunigami [2000], there were 56 ISPs altogether.

[19] From July to October 1996 the monthly cost of access to the Internet dropped from US$38 to US$12. These are Telefónica's figures, presented in tabular form in [COPRI, p. 2]. Telefónica does not specify, but it may be supposed that this represents either the price of the dial-up service or a weighted average of the dial-up service and dedicated service, exclusive of the cost of the telephone service.

[20] In 1996 Telefónica, acting through its subsidiary, Terra, entered the Internet business as a direct supplier and bought up most of these small businesses. At the end of 1999 there were in Peru four ISPs with their own connectivity abroad: Terra, with perhaps 60-70% of the market, RCP with 20-25%, and two small competitors: AT&T-IBM and, since November 1999, FirstCom.

[21] Clayton-Powell III [2000, p.3] states that the proliferation of *cabinas* has taken place in only the last two years since 1999, and cites Rosental Calmon Alves, professor at the University of Texas at Austin, a specialist in Latin American media, who suggests that *cabinas* are one of the fastest-growing businesses in Peru.

In her first report, based on a visit to Peru in December 1998, Fernández-Maldonado [1999, p. 12] suggests that there are "more than 200 *cabinas*." A year later, on December 28, 1999, Lama [2000, p. 1] estimated "there are about a thousand of these places in Peru..."

[22] Apoyo has estimated the monthly family income in the poorer population strata (Table 3) at about US$126, of which 20 hours of *cabina* time would take 12%, which may make that time unaffordable. However, *cabina* use is discretionary, and a poor person can resort to it with advantage for shorter times in the month.

Table 4. Perú: Telephone Ownership by Socioeconomic Strata - 1993 to 1999

Year	Total	Socioeconomic Strata			
		A	B	C	D
	---------- % de hogares ----------				
1993	17	92	54	10	1
1994	22	100	68	16	1
1995	28	100	75	21	1
1996	37	100	84	36	7
1997	42	100	83	44	13
1998	48	100	96	52	21
1999	49	99	94	62	21

Source: Apoyo (cited in www.osiptel.gob.pe/cifydat/cont/mas.html)

Table 5. Cost of Individual Access to the Internet in Selected Countries of Latin America - November 1998

Country	Per capita income in 1997		Monthly cost of Internet Access[1]	Cost of Internet Access as % of per capita monthly income	
	Annual	Monthly		Investment[2]	Monthly expenditures
	---------- US$ ----------				
Chile	12,730	1,061	52.68	66%	5%
Argentina	10,300	858	54.27	82%	6%
Venezuela	8,860	738	73.61	95%	10%
México	8,370	698	40.06	100%	6%
Brasil	6,480	540	50.26	130%	9%
Perú	4,680	390	40.45	179%	10%

[1] Assumes 20 hours of Internet use per month.
[2] Assumes the cost of a computer is = US$700.
Source: Income and access cost data is from Fernández-Maldonado [1999, p. 7]

Price Policy and Institutional Framework

In Peru the financial constraints on the government's ability to grant subsidies are widely acknowledged in the national political culture. It is tacitly understood that charging for a service is reasonable and in keeping with the need to cover the costs of the *cabinas*. This holds not just for commercial *cabinas*, but also for public-service *cabinas*, an attribute that has facilitated the development of legal and operating frameworks that enable municipal and university *cabinas* to charge for services rendered to the public.

Cash Flow and Profitability

A basic commercial telecenter is easy to set up and the financial aspects are simple (see [Terra (b)]) provided connection hurdles do not complicate them. Table 6 shows establishment costs for a *cabina* in Arequipa, Peru (November 2000). These figures do not differ greatly from those that apply to cybercafés found throughout the region. With US$10,000 to US$25,000 a basic telecenter can be set up in any city in Latin America and the Caribbean.[23] In Peru, the main investment

[23] There are of course variations. For example, the investment to set up the Infoplaza in Penonomé, Panama, came to US$13,250 for hardware, US$2,800 for furnishings (including air-conditioning), and $4,500 to prepare the premises, for a total of $20,300.

cost item is the purchase of computers; the main operating cost is the cost of connecting to the Internet (Table 6). The latter should be through a dedicated line, which is less expensive and more reliable. In this model the telecommunications utility supplies the synchronous connecting modems, and the configuration does not require a net server. In cities and towns where the telephone connection is well established, none of these aspects pose insuperable obstacles. In these cases institutional and managerial aspects are the key to success.

Commercial telecenter profitability depends primarily on the hourly rate charged and the rate of machine use. Table 7 presents a cash flow for a *cabina* and illustrates how that flow, and the telecenter's self-sustainability, are affected by changes in the rate charged for an hour of service. A manager tries to keep his machines in use by offering promotional prices especially at slack times of day – in the morning, for example. Where competition is brisk this strategy essentially draws customers away from neighboring telecenters, which in turn try to retain them by lowering their own rates. In the Peruvian case, illustrated in Table 7, the drop in rates from $1/hour little in 1998 to $0.50-$0.70 at the start of 2000, while good for the customer, is driving into a corner those who entered the *cabina* business at its peak.

Rates are presently very low in Peru and *cabina* profits are minimal. In this stage of strong competition the *cabina* operators are staying in the business only by offering discounts to draw more customers, using pirated or license-free software, setting up shop in family-owned premises, or combining the *cabina* business with related business activities such as document reproduction or computer sales (which facilitates hardware maintenance and replacement).

Telephone Service and the Internet in the Countryside

According to the 1993 census Peru has some 70,000 settlements containing fewer than 3,000 inhabitants where about 30% of the national population reside. The great majority of these settlements have no basic services, including electric power, drinking water and telephones.

Telephone service has become more widespread in the Peruvian countryside in recent years, but on a much more limited scale than in the cities.[24] Telefónica has installed at least one public telephone each in some 1,500 areas with populations of more than 500 inhabitants. The few *cabinas públicas* set up in rural areas (e.g., the AEDES *cabina*) are subject to frequent interruptions of service and operate at very high cost.

[24] Telephony data cited is from CITEL-ITU-AHCIET [2000, pp. 95 to 100] and from [OSIPTEL].

Table 6: Basic Telecenter - Cabina Publica Prototype
Investment and Operating Costs (US$)

Item	Quantity	Price	Investment	
Furniture				**1,080.00**
Tables for computers	14	51.43	720.00	
Desk	1	60.00	60.00	
Chairs	30	10.00	300.00	
Equipment				**14,775.00**
Computer- Pentium II	15	900.00	13,500.00	
Laser printer	1	500.00	500.00	
Electricity stabilizer 3 Kva	1	375.00	375.00	
Router	1	400.00	400.00	
Network:				**468.30**
Network cards 10 Mbps	14	20.00	280.00	
UTP Cable - level 5	304	0.20	60.80	
Connectors RJ45	50	0.15	7.50	
16 port hub	1	120.00	120.00	
Internet Service - instalation	1	250.00	250.00	**250.00**
Total investment cost				**16,573.30**

Operating expenditures	Quantity	Price	US$	
			monthly	annual
Rent	1	250	250	3,000
Dedicated line - 64 Kbps	1	478	478	5,736
Annual replacement (machines)	3	900		2,700
Electricity, water, cleaning of facilities	1	150	150	1,800
Personnel	2	100	200	2,400
Equipment maintenance	1	20	20	240
Total operting expenditures			**1,078**	**15,876**

Source: Courtesy of Carlos Linares (informatics advisor at UNSA).

Table 7: Illustrative Model Cash Flow and Rate of Return on Investment - Basic Telecenter - Cabina Publica Prototype (US$)

Typical period of service - number of	10:00 AM	10:00 PM	12	hours
Maximum Service				
Computers	14			
Hours	12			
Hours of service per day	168			
Total number of days per month	26			
Maximum number of hours per month	4,368			
Average operating service				
Average rate of use of computers (a)	65%			
Average monthly hours of use of computers	2,839			
hipótesis de precios:	**A**	**B**	**C**	**D**
Price charged per 1 hour - S./	**2**	**2.5**	**3**	**3.5**
Price charged per 1 hour - US$	0.58	0.72	0.86	1.01
Profitability (US$)				
Gross monthly income	1,636	2,046	2,455	2,864
Gross annual income	19,637	24,546	29,456	34,365
Operating costs per year	15,876	15,876	15,876	15,876
Annual income - net of operating costs	3,761	8,670	13,580	18,489
Investment cost (1st year)	16,573	16,573	16,573	16,573
Rate of return on investment (b)	**-4%**	**38%**	**73%**	**105%**

Source: Prepared on the basis of data supplied by C. Linares (2 November 2000)

Notes:

(a) Survey count in one cabina publica indicated an average rate of use of the equipment by the puflic of 60 - 70%.

(b) Assumes a planning horizon and useful life of 4 years and no salvage value for the equipment.

User Survey in Selected Cabinas Públicas

Methodology

The study administered a survey among users of 14 *cabinas públicas* in Peru. The *cabinas* were selected by the RCP and its collaborators. The selection purposely sought to include *cabinas* operating in low-income urban and rural areas and variety in forms of management.

The objectives of the survey were to:

i) identify the characteristics of the users of the 14 *cabinas* selected, and, in particular, to determine whether they are or are not in fact serving low-income users, as casual observation would suggest they do;

ii) identify the ways in which the *cabinas* are used;

iii) identify the principal needs, aspirations and attainments of the users, and

iv) determine the users' perception of the quality of the service they receive in the *cabinas* and what changes if any they recommend for its improvement.

The questionnaire used in this study (see Annex B) is adapted from a similar instrument previously used by the Community Technology Centers network [CTCNet 1998]. Questionnaire forms were distributed to users by administrators and staff of the 14 participating *cabinas* over a 6 week period in March-April 2000. The completed forms were subsequently processed by the Informatics Institute of San Agustín University (UNSA, Arequipa). Completion of the survey form was a voluntary exercise. Operators were advised not to let the survey disrupt the normal operating rhythm of their *cabinas*.

Altogether a total of 1,906 survey forms were completed. These included 96 forms filled out by transients (visitors to the cities in which they filled out the forms) and 58 children under 15 years of age.[25] The analysis focuses on the remaining 1,752 survey respondents. Table 8 shows the distribution of these respondents among the 14 *cabinas*.

The information obtained is representative of **the users who filled out the survey forms.** The sample is **probably also representative of the users of the eight *cabinas*** (out of the total of 14) which had a high rate of response. Included in this subset are the 4 university *cabinas* (3 of UNSA in Arequipa and one at UNSAAC in Cuzco), 2 commercial *cabinas* (the RCP *cabina* in Cuzco and Villanet in Lima), and the 2 NGO *cabinas* (one operated by AEDES in Cotahuasi and the other by ITDG in Cajamarca). In the other 6 *cabinas*, all of them commercial, the rate of user response was very low, perhaps around 10%, and the sample is hence not representative of the users of those *cabinas*. In addition, the results of the survey, though not statistically representative, **are probably indicative of the profile of users of *cabinas públicas* located in low-income and relatively remote areas of Peru**.

[25] In general, transients excluded themselves from the survey. The analysis of this group is of interest from a marketing standpoint but of little use to the present study, in which the emphasis is on low-income users. Children are of interest, especially in relation to *cabinas* such as AEDES's, which is the only connection available to them apart from the telecenter. Nevertheless, the motivations, knowledge and interests of children are different from those of adults. Their analysis merits a treatment that lies outside the scope of the present report.

Table 8. Number of questionnaires completed by non-tourist adults (15 years or older) and distribution according to distinctive features of the cabinas participating in the survey

Location / Name of the cabina		University	Commercial					NGO			Total no. of questionnaires completed
			Provincial capital	Lima - low income neighborhood	Commercial - Municipal	Commercial Small town	Total Commercial	Remote rural area	Small provincial capital	Total NGO	
Arequipa	UNSA – San Agustín	995									995
	UNSA – Garaycochea										
	UNSA – Biomédicas										
	World Service		23				23				23
	Internet Services		7				7				7
	AEDES (Cotahuasi)							42		55	42
Cusco	RCP – Cusco		77				77				77
	Inti@Net		11				11				11
	UNSAAC	354									354
Urubamba	Cibermaster					14	14				14
Lima	Villanet			138			138				138
	Televia			16			16				16
	IC-Informática			30			30				30
Cajamarca	ITDG - Perú								45	50	45
Total		**1349**	**118**	**184**	**(192)**	**14**	**316**	**42**	**45**	**105**	**1752**

Results

Out a total sample of 1,752 adult non-transient users, 1,337 were students (76.3%). This dominance of students in the sample is in part due to the inclusion in the survey of four large university *cabinas*. Fifty seven percent of the forms completed (56.8%) were filled out by 995 users of the 3 UNSA *cabinas* in Arequipa, and an additional 20.7% (354 forms) came from UNSAAC in Cuzco. Not all the users of those university *cabinas* were students. Non-student users accounted for 24% of UNSA and 10% of UNSAAC respondents. Students however are among the main users of Peru's *cabinas públicas*. Students represent a significant proportion of users of non-university *cabinas*: out of 403 questionnaires completed in the other *cabinas* surveyed, 268 (66%) came from students.[26]

Detailed tables of survey results are presented in Annex A. To get a broad picture of survey respondents, these tables differentiate between the 1,337 student users and the 415 who were not students at the time the survey was carried out.

Age, family structure and occupation

The users surveyed are mostly young (Table A-1.a). The average age is 22.7 years for all respondents, 20.7 for the students and 28.8 for the non-students. By comparison, the average age of the Peruvian population aged 15 or older is 35.9 years.[27] Users are predominantly male - 56% of them were men and 44% women - and this ratio of men to women holds for both students and non-students.

Most of the users are sons (72%) and daughters (77%) living in their families' residence and are unmarried (83.3% of the sample) - Table A-1.a. The situation is different for non-student users; sons (47%) and daughters (53%) also predominate, but there are more heads of families (22.9%) and spouses (7.7%) amongst them. Fewer non-student users are unmarried (60%) and more of them are married (28.7%), divorced or separated (6.5%), or cohabitating (4.9%).

The average family of the student user comprises 4.7 persons. Reflecting the greater age and higher incidence of newly founded families, the average family of the non-student comprises only 3.7 persons - Table A-1.a.

A significant number of the student users were also in the labor force at the time of the survey, mainly as unemployed (4%), salaried workers (3.9%) and professionals (2.8%) - Table A-1.b.

The most frequently cited occupations of non-students are professionals (26.6%), a category that includes physicians, lawyers, and engineers, among others. A higher proportion of men (32.8%) than of women (19%) are professionals. The next most important occupation among non-student users is that of salaried worker (17.4%), a category where women predominate (21.5%). The pro-

[26] It might be that student users have a greater propensity to respond to the survey than non-student users. However, 69.3% of the users at the *cabinas* in which the response was low (World Service, Internet Service, Inti@Net, Cibermaster, Televia and IC Informática) were students. This figure is very close to the 70.4% found for the proportion of students in the other nonuniversity *cabinas* where the response to the survey was high (except for the AEDES *cabina*, where the rural conditions are very particular) and for which, therefore, the sample is more representative of their user population.

The findings here reported on are consistent with those of Nagaro [1999, p. 17], who found in 1999 that students represented 74% of the users of *cabinas* in Villa El Salvador and 62% of 3 *cabinas* on Wilson Avenue.

[27] Estimate is based on CELADE [2000] projections for the year 2000

portion of non-students who are teachers (12.5%) is also noteworthy, especially among women (16.5%).

Education

The proportion of survey respondents with a high level of schooling is high; **much higher than that of the Peruvian population as a whole.** This is true for student users as well as for non-students. The difference in educational attainment with between *cabina* users and the population at large is much more pronounced in the case of non-students (Table 9).

Table 9. Level of educational achievement: Peru and survey respondents (%)

Level	Survey results				Perú 1999 **	
	Total	Students	Non-students	Low income users of cabinas #	Peruvian population	Heads of households
Little or no education	0.2	0.1	0.7	0.6	8.1	9.8
primary school	0.4	0.4	0.5	1.0	30.6	38
secondary school	30.2	37.0	9.3	28.3	41.8	33.7
advanced - non-university	27.2	28.9	21.9	37.9	19.5	5.6
University	42.0	33.6	67.6	32.2		12.9

\# Users reporting an average monthly family income of less than S./ 500

* Survey of users of selected cabinas publicas - Table A-1b.

** [INEI]

Ninety nine (99) percent of the respondents gave Spanish as their native language and 39% indicated they could read English. Although some observers estimate that 20% of the Peruvian population has Quechua, Aymara or some other indigenous language as their mother tongue, only 13 adults (0.7% of the total) in the sample gave one of these as his or her native language.

Family income

In Peru the poverty line has been estimated (1997) at the equivalent of US$39/month per capita in urban areas and at US$23/month in rural areas. This figure represents the income needed to consume a basic food basket plus an essential minimum of clothing, housing and other basic needs [Trivelli 1999, p. 9]. For a typical family among the student respondents (averaging 4.7 persons per family), the equivalent poverty line is US$198 and for the family of a non-student (3.7 persons) US$156.

Table 10 presents estimates of monthly family income of cabina users. About one third of the adult users surveyed had incomes below the poverty line. [28]

[28] Respondents who did not work or otherwise contribute to family income are unlikely to be familiar with the magnitude of their families' earnings. Accordingly, the estimates given here are based on answers given by survey respondents, excluding those of users who made no contribution to family income.

Table 10. Monthly Family Income of Users of Selected Cabinas Publicas

Monthly family income	Survey results				
	Total	Students	Non-students	Low income neighborhoods in Lima	Remote rural area
less than US$ 144	32.6	37.7	25.9	33	48.3
US$ 144 - 288	33.3	30.4	37.2	39.8	41.4
over US$ 288	34.0	31.9	36.9	26.9	10.3
	100.0	100.0	100.0	100.0	100.0

Source: Survey of users of selected cabinas publicas - Table A-1.c. - and special tabulations aggregating results for 3 cabinas in Lima (Villanet, Televia e IC Informática) and for the AEDES cabina separately.

Considered together, Tables 9 and 10 suggest that the selected *cabinas públicas* are serving a very particular population.[29] They are actually serving people who are users and poor and are thus part of the target group. Nevertheless, the low-income population being served has built up a significant amount of human capital and has therefore a high potential to rise above their poverty status. This is of course a most desirable feature. The down side is that there does not appear to be much depth in the impact that the *cabinas* are having on poverty. They are barely affecting the lives of the large numbers of people who have also had little formal schooling.

Cabina Use

Surveyed users typically patronize 2 or more *cabinas*, 2.3 on average. The *cabina* is less than 1 kilometer away in 44% of the cases and less than 5 km away in 70%. Forty percent of surveyed users have computers at home, but only 5.1% of them are connected to the Internet. Eighty four percent of the male students go to the *cabinas* at least once a week, as do 79% of the female students and 79% of the male and 68% of the female non-students. Sixty eight percent of the users spend an average of one to two hours in the *cabina* on each visit. The most common way in which users learn of the existence of a *cabina* is from relatives and friends, but they also frequently learn of it by happening upon it. (Table A-2).

Fifty seven percent (57.5%) of the students reported that their main purpose in using the *cabinas* was "to do homework or school or university work" and "for academic study." These activities were also stated as the main purpose for using them by 26.3% of the non-students. "Keeping in touch with relatives and friends" was also a principal use for 24% of the users; and reported somewhat more frequently by women than by men. Buying and identifying products through the Internet was cited as the principal use by 11% of the users. The most frequent secondary uses were "recreation/amusement," mentioned by 21% of surveyed users, and "to learn computers and the Internet," given by 11% (Table A-3).

The hardware "frequently" used by the largest proportion of users is the computer (69%), the printer (14%), and the telephone (12%). The frequently used services are e-mail (60%), information searches on the Internet (51%), and chatting (39%) (Table A-4). The priorities assigned by the users to those hardware items and services are in keeping with these use frequencies. The computer and telephone have first priority, whereas a significant number of users regarded the printer as of second priority (Table A-5). The services most frequently mentioned as first priorities are information searches on the Internet (34%), e-mail (30%), and chatting (10%), and are also mentioned frequently as a second priority service by users (Table A-6).

[29] The populations of the two tables are not exactly the same. Table 7 excludes *cabina* users who made no contribution to family income.

Purposes, goals and accomplishments of users

The purposes most frequently selected by student users were "to do better in school or in studies" (80%), "to upgrade computer skills" (66.2%), "to find a partner, make new friends or maintain existing friendships" (53.5%), and "to keep better informed" (49.8%). The reasons most frequently given by the non-students were "to improve work skills" (62.2%), "to improve computer skills" (56.2%), "to keep better informed" (51.3%) and "to do better in school or in studies" (48%). There were some differences between the purposes stated by the male and female respondents, but they are not very marked (Table A-7).

In general, the users surveyed expressed satisfaction with the progress they had made towards accomplishing their own personal goals in using the *cabinas* (Tables A-8.a to A-8.c). Among students, for instance, 48% of those whose goal was to improve in their studies indicated they had either attained their goal or were very close to attaining it. Another 47% said they had made "some" improvement. Among non-students, 52% of those whose objective was to improve their work skills reported that they had either attained or were very close to attaining their objectives and an additional 41% said that they had made some improvement.

For the most part, surveyed users felt satisfied with the effect of using the *cabinas* on their skills in the use of computers and modern communication media (Table A-9). Ninety two percent considered that their skills had either "improved greatly" (46.9%) or "improved somewhat" (44.7%). The difference between new users (who have been using a *cabina* for less than 6 months) and experienced users (more than 6 months) is noteworthy:

% who feel they:	**New users**	**Experienced users**
have improved greatly	43.6	53.7
have improved somewhat	49.0	38.2
have not changed much	7.0	7.3
are worse off than before	0.4	0.8
Total	100.0	100.0

In general, users of *cabinas públicas* are also satisfied with the services they receive. Dissatisfaction is seen only in relation to the hardware and training services, which 18% of the users rate as "poor" (Table A-10). Only 53% of the users suggested ways to improve *cabina* services. The principal suggestions were for the upgrading of hardware, software and maintenance (47%), the atmosphere (19.6%), and customer service, to make it attentive and ongoing. (18%) (Table A-11).

Browsing

Only 73% of surveyed users browse the Internet. Men do more browsing then women, and browsing is substantially less frequent among non-student women. The ability to read English does not appear to be a determinant of browsing. Users capable of reading English represent 43.6% of all browsers and only a slightly lower proportion - 39.3% - of all the users surveyed.

The content of interest varies widely (Tables A-12.a - A-12.b). Many browsers are interested in a diverse range subjects. A salient feature is the great interest of both students and non-students in educational content (51%) and academic research (66%).

3.3 Franchise (commercial)

In principle, a commercial franchise can make it easier for an entrepreneur to provide quality services valued by the market and significantly reducing the risk of failure.[30]

> "Franchising is a way of doing business whereby the owner of a proven business system (the franchiser) grants the right by contract to an entrepreneur (the franchisee) to establish a similar business. In exchange for franchise fees and the obligation to adhere to strict quality standards, the franchisee acquires the right to use the franchiser's trademark and receives marketing support, detailed manuals on how to operate the business, start-up assistance, staff training, equipment, raw material procurement, and regular visits by a representative of the franchiser." [Henriques and Nelson 1997, p. 23].

Peru

The most lucid and best known representation of a telecenter franchise model is that of the Peruvian Scientific Network (see [RCP] and [Herrera-Burstein]). In practice the RCP is in business relations with some 100 *cabinas*. Some of these are directly managed by RCP (at Cuzco, for example). In other cases RCP acts as Internet Service Provider for independently run *cabinas*. RCP also organizes a number of virtual and training events for various types of *cabinas*. In addition, there are also Peruvian business chains that offer a relatively uniform grade of service in their *cabinas*, including those of the RCP and another cited by Lama [1999, p. 1], "with 25 (machines) at each outlet, set up in residential neighborhoods by Asian venture capital." Nevertheless, contrary to a view that is common outside the country, **the RCP's franchise project has remained a model and has not taken hold in Peru.**

For a franchise to work, the franchiser or grantor, has to offer a service that is special, different from that of his competitors, that is valued by the market, and for which he may collect payment from his franchisees. For the telecommunications utilities that operate as monopolies it is easy to set up public telephone franchises in rural areas. In Peru, Telefónica has phone stations installed in small towns, in grocery stores and at locations open to the public, and the users pay the store for the calls they make. If a merchant in such a town wants to install a telephone on his business premises he is forced to apply to Telefónica and, at least until recently, he had no alternative.[31]

The situation is different in the case of the *cabinas públicas* in Lima and in the major cities of the country, where competition is stiff at several levels. Everywhere *cabinas* compete for customers at very low prices. The markets for hardware and software are extensive and offer products at very low cost (hardware purchased in Wilson, and software that has been pirated or downloaded

[30] [Franchise Services Associates, p. 1], a firm dedicated to supporting the development of franchises, cites a study of the U.S. Small Business Administration that found that 62% of all businesses established from 1987 to 1988 closed down for a variety of reasons, including failure, bankruptcy or retirement. The same document cites another study done by Arthur Anderson and Company, which examined 366 companies in 60 industries and found that almost 86% of all franchise operations set up in the last 5 years were still under their original owners and only 3% had ceased operations.

[31] In Peru, Telefónica has set up many such rural telephone stations as part of its agreement with Government for the purchase of the former monopoly enterprise, but not because rural telephony is profitable. In many other countries, monopoly conditions have made rural telephony franchising schemes profitable; or, rather, have enabled cross subsidization of rural telephony using high profit services In Honduras, for instance, HONDUTEL has extended its rural service to more than 400 localities under telephone franchises that award the franchisee up to 30% of the telephone tolls [Cálix 1999]. A similarly successful franchise scheme has been reported for Senegal [Norton *et al.*, pp. 86-01].

from the Net free of licensing cost). There are several ISPs and 4 telephone utilities to choose from. In these circumstances,[32] it is hard to envisage the advantages - whether technical, or in marketing or purchasing power - that a franchise could offer to telecenters whose target customers were urban low-income people.

Other Countries

TeltecGlobal, an American enterprise, recently announced the establishment of a **commercial franchise** for "centers of influence," premises ranging from 5,000 to 10,000 square feet and operating "as Super Kinkos (a document reproduction service), Internet café, virtual classroom, Internet service provider and small (electrical appliance and equipment) showroom under one roof." The arrangement is that "the local partner ... pays an initial fee of $25,000 to $50,000 ... (and) after a six-month trial period, ... $350,000 to $750,000 for the equipment, or TeltecGlobal fronts some of that cost through a 3- to 5-year lease-to-buy option." TeltecGlobal supplies the equipment, technical expertise, learning services and support. It has signed contracts with local enterprises for the construction of 2 centers in Uganda and 6 in Viet Nam, and envisages setting up a total of 250 over the next three years in different parts of the world.

The most ambitious telecenter franchise effort has been launched by [S. Kumars.com Ltd.] in India. If it is successful it will have a considerable impact on low-income people. It provides for the installation of an estimated 50,000 kiosks starting with 1,000 in 2001. For a total investment of US$ 4,545, each franchisee is being offered a complete package of services including:

> Broadband Internet connectivity via VSAT.
>
> Equipment and software - one 600 Mhz computer with 10 Gb hard drive and basic software, a 7 inch monitor, a printer, a web camera and scanner.
>
> Credit financing of part of the investment by a State sponsored banking institution.
>
> Online purchase system: clients would pay in cash for online purchases from the franchisees. Since credit cards are uncommon in India, the franchisee would complete a transaction by drawing on a trade account previously established with S. Kumars through an initial deposit (of US$ 454) that is periodically replenished.

The two experiences described here are franchising ventures that have yet to demonstrate their financial viability in practice. Commercial franchising operations will eventually develop and may perhaps even thrive in Latin America and the Caribbean. One possibility is that, as is the case with TeltecGlobal, it focuses on providing high-value services to relatively well off business customers rather than to the low-income segments of the population. A second possibility is that it follows the S. Kumars approach, offering broadband and e-commerce services and takes advantage of scale economies and high investment requirements associated with infrastructure development. In Colombia, Telefónica is establishing a commercial telecenter franchise, predominantly in rural areas, under the auspices of a government subsidy of its business model (details are given in section 4.3). It is not clear, however, that a commercial franchise that caters to low-income people can thrive in a more competitive (e.g. urban) setting.

[32] Terra has started to work with the *cabinas públicas* in Arequipa (with a view to eventual extension of its operations to Lima) in a fairly practical way, but not under franchises. It offers discounts of "up to 50%" for dedicated on-line connections to *cabinas* that succeed in persuading their customers to visit the Terra portal [Terra (a)].

3.4 The University Telecenter

Peru

Unlike other countries, in Peru the government allows and even encourages the universities to install *cabinas* to serve the general public and charge for their services. The universities have on their premises laboratory classrooms equipped with computers, which are not, for the most part, connected to the Internet. These facilities are complemented by the *cabinas públicas*, which are intended primarily for the students but are also open to the public and attract a diverse clientele. The administrative rules that govern state financed universities, these *cabinas* are regarded as "production centers." This has enabled the establishment and maintenance of, for example, 3 *cabinas* by San Agustín National University (UNSA), one of them in downtown Arequipa, and another 3 by San Antonio de Abad National University of Cuzco (UNSAAC), including one in the city's central park.

The university *cabinas* are among the largest in terms of the numbers of users they can accommodate, are closely linked to the instructional programs, provide connections of good quality and modern equipment (at least at present), and facilitate the performance of related services, especially training courses and the preparation of content for the Internet. Their principal but not sole customers are precisely the young people that are technically skilled and prepared to learn and assimilate new things.

Despite these advantages, the presence of a government-subsidized institution poses a potential problem. In its desire to keep its generally large cabins full, it sometimes offers heavy discounts that could frustrate the efforts of neighboring independent, unsubsidized telecenters. The problem is not serious at the university *cabinas* located on campuses or in remote areas, as in the case of UNSAAC's main *cabina* in Cuzco, or those of the UNSA on the Biomedical and Garaycochea campuses in Arequipa, but the more centrally located university telecenters should in their business practices weigh the importance of not stifling the development of the private sector.

Other

The novel feature of the Peruvian case, the establishment of telecenters run by the universities themselves, has been taken up elsewhere by, for example, the Technological University of Panama (as reported by SENACYT [2000, p. 13]). Generally, however, the universities in the region are not directly involved in running telecenters.[33]

3.5 School Telecenters

Canada

The best-known school telecenter is the Leo Ussak elementary school in the Canadian Arctic [Belsey, Tulloch, *et al.*] with a student body of 360 students. The information technology program was set up by an enthusiastic teacher, Bill Belsey, who set out to get students involved. He ended up improving the self-esteem of students and their parents in one of the most remote re-

[33] This does not mean, of course, that universities are not playing an important part in telecenter development. In Chile, for example, the Universidad de la Frontera has played an important part in setting up municipal telecenters; in Mexico the Metropolitan University has supported telecenter ventures of the federal government, and in El Salvador the UCA is an active participant in the Infocentros program.

gions and with a most hostile climate in the world. The venture began as a school computer course in 1988 and expanded gradually. The [Igalaaq Access Center] was established in 1994 with an initial fund of US$100,000 raised by awaking the interest of parents and adults in the community. The Telecenter now has 20 computers, 2 scanners, a digital camera and videoconferencing equipment. It is operated after school hours by a team of 30 volunteer workers who service the hardware and assist the students. More than 400 people in Rankin Inlet (over 20% of the total population) have e-mail accounts through the center. There is no charge for visits, and the Center depends mainly on contributions from the Canadian government (primarily the Community Access Program and grants from local private business). Belsey expects that the center will eventually have to charge for its services, as it is presently constantly struggling to cover costs.

China

The International Telecomputing Consortium is engaged in a pilot project at two schools in Peking and another two in southeast China, where the school system receives little government support and the schools traditionally have to run their own businesses (hotels, restaurants, stores, printing shops, etc.) to generate income to pay their expenses. The project supports the technical development of schools with hardware and instruction, and outside of class hours the facilities are used to provide the typical telecenter services to the public (see [ITC] and [Cole and Román 1999, p. 16]).

Other Countries

Lack of hardware and connectivity in schools, ignorance of technologies and how to use them, connection problems, and fear of losing control (either on the part of the administrative staff or the teachers) are factors that may be hindering the development of school telecenters in the region. Some promising ventures exist, however.

According to Mandigoane [1999, p. 7], after successful experimentation with the introduction of computers (in 1996) and access to the Internet (in 1997) at 5 schools (and made available for use by another 15 satellite schools) in low-income neighborhoods in South Africa, the next step calls for opening the centers to their communities. It is to be hoped that the same thing will happen in similar ventures in Latin America and the Caribbean, such as the one described by Jaramillo [1999] at 200 rural schools in the coffee-growing region of Colombia. There are also indications that, in Chile, the Enlaces project, whose purpose is to extend Internet connectivity to all the schools in the country, is considering opening those schools to the public after school hours.[34]

3.6 The NGO Telecenter

NGO-sponsored telecenters present a very broad range of modalities and innovations in how they operate and the services they offer.

Peru

ITDG-Peru (a local subsidiary of an NGO headquartered in the United Kingdom) operates a telecenter with 8 machines, **INFODes**, in Cajamarca. This telecenter started operations on March 28,

[34] Enlaces is also working closely with the World Links for Development Program [World Bank] helping develop training materials for school telecenters.

2000. It is part of a broader program of information systems for urban and rural development, that involves the local citizenry and their leaders in the determination of content and dissemination of information.[35] Hourly rates for the Internet service are US$0.70-0.85, similar to commercial rates in cities with many *cabinas*, such as Lima, Arequipa and Cuzco. ITDG Peru is considering eventually transferring the telecenter to a local consortium at a more advanced stage of the project.

The Association for Sustainable Development (AEDES) has been working for 5 years in Cotahuasi, La Unión, Arequipa, a district of 20,000 inhabitants. This is one of the most out-of-the-way rural areas of Peru. It takes about 14 hours to reach Cotahuasi by car; if it doesn't rain and one is able to get there at all. With elevations ranging from 950 m to 6,200 m, Cotahuasi is blessed with extensive biological diversity, which AEDES has been harnessing for development by supporting local efforts to export high-value organically produced local products.

In 1997, when the first satellite telephone was installed, AEDES staff began to use e-mail and the Internet to communicate and gather information. Soon afterwards, campesino leaders and public officials, especially those working in health and education, requested access to the new means of communication. AEDES complied, but, as the demands for the use of the institution's computers grew, the financial burden became excessive and AEDES responded by founding the **Cotahuasi Internet *Cabina*** thus opening up its computers for use by the public at large.

The leaders of the amaranth (*kiwicha*) growers use the *cabina* to communicate with exporters and are looking for new ways to diversify their production. The leaders of the women's federations in La Unión province are trying to link up with similar women leaders in order to enhance their bargaining power and social standing vis-à-vis different government offices and supporting institutions. The local schools have helped conduct several inventories of the biodiversity in the area and have started to use the resulting material in specific projects, establishing contact with students in other parts of the world. The *cabina* charges different rates for students (US$0.43/hour), professionals (US$0.86/ hour), and farmers (US$0.58/ hour). Leaders pay nothing when engaged in community work thanks to a subsidy funded by a Canadian project. Special rates are also available when the machines are used to conduct classes by the local school.

Making its own machines - 7 altogether - available to the public is an innovation introduced by AEDES that could be emulated elsewhere by development projects and NGOs. What is required to introduce a change of this nature? First, the sponsoring institution's information on the hard drive must be protected. Security systems need to be adopted and the institution's data base must be frequently backed up. Second, the computers must be kept physically separate from the other parts of the institution's offices. Third, an accomodation must be made between the competing demands for computer use by the institution and by the public at large. In AEDES case, while the NGO's professional staff (8 to 15 persons) do not pay to use the computers, they have specific work schedules depending on their functions. Between 2 and 8 p.m. service to the community takes precedence. AEDES's field staff start work early (at 5 a.m.) and use the computers, if necessary, only after 8 p.m. The administrative personnel work with the machines only during morning hours.

[35] For a description of the project "INFODes: Information system for urban and rural development," see [Saravia 2000 (a) and (b)]. The Infodes web page may be reached at http://www.infodes.org.pe

Chile

Since June 1999 the **El Encuentro** Community Internet Access Center has been operating 7 computers in Peñanolén, a low-income neighborhood in the Santiago metropolitan area.[36] The Center was established by the non-profit Encuentro corporation thanks to the efforts of the neighborhood's former councilman Claudio Orrego, currently Minister of Housing, and grant assistance in the form of donated hardware and services from private businesses, including Ekhos I+C (a consulting firm), Microsoft, Telefónica, and Compaq. The corporation operates a radio station in the same building where the telecenter is situated. Represented in the corporation's board of directors represent the contributing enterprises and influential persons who help raise funds for the center and the radio station. There is also another, separate, "board of directors" that sees to the telecenter's specific needs.

To cover expenses El Encuentro charges US$1 per hour of service, less than the US$3.85/hour charged on average by cybercafés [Cash 2000]. To save on wages, the center employs university students as interns to help as computer attendants and as web designers on behalf of the center. Hours of service to the public are from 10 a.m. to 10 p.m. Monday to Friday, and Saturdays from 10 a.m. to 7 p.m. Training courses are conducted during weekdays in the last two hours of the evening. The two main trainint courses are: basic computer operations (word processing and spreadsheets) and the Internet (browsing, e-mail and chatting). Each course comprises 5 sessions for a total of 10 hours per course, for which customers pay US$16. This training is sought mainly by adults, as young people generally adapt very rapidly to the new medium and do not require it. El Encuentro is also endeavoring to promote the economic development of the small and micro-entrepreneurs of Peñanolén, for which a catalogue of the trades and services in the commune has been compiled.

Brazil

The Committee to Democratize Information Technology (Comité para Democratizar a Tecnologia da Informação, or CDI) has set up since 1995 a total of 240 **Information Processing and Citizenship Schools**, each equipped with 5 computers, about 40 of these connected to the Internet (May 2001). Each year, more than 25,000 young people from the shantytowns *(favelas)* are trained in these schools ([CDI] and [IICD 1999]). The training imparted aims to open up new employment opportunities for young people and to use materials on subjects of civic interest and topics that are immediately applicable in their daily lives, including human rights, nonviolence, the environment, health, and sexual education. CDI establishment is funded by contributions from government and the private sector, including philanthropic institutions and multinational corporations (banks, suppliers of software and computer hardware, among others).[37]

A community sets up a CDI school on its own initiative. It begins the process by submitting an application to the CDI. To qualify for CDI support, it must first find classrooms and select the local instructors. The CDI provides specialized instructors, that receive a wage of US$ 200 a month - about twice the average remuneration in the public school system - and supplies the hardware, software, training in instruction and management, and any other support that may be needed to put the school into operation.

[36] The information available on the Internet ([Pérez Carranza 2000], [Telelac] and [El Encuentro] has been complemented with information supplied by Roberto Salas, the center's director.

[37] The CDI's sponsors include BNDES, Microsoft, Xerox, EXXON, the Starmedia Foundation, IBM, the AVINA Foundation, and Global Partnerships.

Apart from this specialized CDI support, the schools are self-supporting. They employ volunteers resident in the community and use recycled materials, and are housed in premises made available free of charge by churches, community organizations and neighborhood schools. The hardware is generally donated by businesses and individuals that reside in the community. The students pay a fee of about US$10 a month for courses of instruction in word processing, computerized bookkeeping, spreadsheets and computer graphics. Students who cannot afford to pay in cash, pay for the training in kind by working in the school.

Once a school is up and running, the CDI continues its technical and methodological support as needed, but the school is responsible for its management, staff, and hardware maintenance and replacement. The schools have experimented with different ways of financing themselves, for example, encouraging their graduates to use the school's hardware in paid work for community groups and small businesses in exchange for a previously agreed upon contribution to the school. Some communities have opened their own cybercafés, giving residents access to computers while earning income to support their school's operations.

The CDI is also engaged in novel projects such as:

- a computer school - using generator power since the public power main does not reach the area - in the indigenous community of Angra dos Reis, where Guaraní youths are learning to use computers in their own language in an effort to recover their history and culture and share it with the world;

- a school that uses voice-recognition software to train the blind and people with defective vision from all over Brazil, as computer instructors and thus give them an employable skill;

- training for convicts in the Britto State Penitentiary of Rio de Janeiro, as a contribution to their rehabilitation.

The CDI is starting to operate internationally. The local CDI branch opened in Uruguay on June 8, 2000, with the support of the StarMedia Foundation (SMF) and the Inter-American Development Bank and official government backing. Acting through its *Instituto Nacional de la Juventud* (National Youth Institute), the Ministry of Education will provide computers to set up information processing and citizenship schools at 8 locations in Montevideo and 2 in Canelones in neighborhoods identified as "risk areas." In Colombia the United Nations Childrens Fund (UNICEF) will work in partnership with CDI-Colombia to set up similar schools in the country.

Other NGO Experiences

NGOs have sponsored many interesting ventures in the region. Most NGO telecenters are directly operated by the promoting NGO, though in several cases the intention is to transfer responsibility for telecenter management to the community at a later stage. Brief descriptions of some noteworthy experiences documented on the Internet follow.

The **Little Intelligent Communities** [LINCOS] project, sponsored by the Costa Rica Foundation for Sustainable Development, plans to establish 30 "Communities" in the Dominican Republic and another 30 in Central America. Each unit is installed in a container equipped with 5 computers and facilities to provide a broad range of services including telemedicine, clinical analyses, water analyses, soil and forest analyses, telecommunications, banking, and technical support for

small and intermediate enterprises. The investment cost has amounted to US$ 85,000 for each of the first 5 units established in the Dominican Republic and US$ 50,000 in San Marcos de Terrazú, Costa Rica. A study has been carried out by University of Berkeley students to identify ways of achieving self-sustainability, but it is not available to the public.

The **Niños de la Calle** (Street Children) project offers life and work choices to boys and girls who have had no previous opportunity for structured learning, through the establishment of centers where they can access the Internet and acquire new skills. The project is sponsored by Canada's IDRC and the Salesian Brothers and is carried out in Ecuador by the ChasquiNet Foundation and the *Corporación Esmeraldeña para la Formación y el Desarrollo Integral* (CEFODI), and in Colombia by **Renacer**, [Fundación Chasquinet].

The **Foundation for the Future of Youth** has received support (an initial amount of US$250,000) from the World Bank's InfoDev Program to finance the establishment of cybercafés and technology centers in different parts of the world [Eigen, Pines and Salett 2000]. The first venture began in November 1999 in Santo Domingo de los Colorados, Ecuador. The purpose is to contribute to the development of youth-run microenterprises and improve their skills using communication and information technologies. Under an agreement with the local organization, Compañeros de las Américas, the Foundation will provide the cybercafé's starting equipment (15 computers, connectivity and basic software), and Compañeros de las Américas will set up a cybercafé with a number of basic features - food and beverage service, a full-time technician in permanent attendance, service to the public at least 10 hours a day 6 days a week, and compliance with periodic reporting requirements - and will provide training services to the community at large in computer hardware and software, e-mail and Internet connectivity. It is envisaged that the center will become self-sustaining within 3 years.[38]

Other projects and NGOs are supporting the telecenter development in the region either by documenting experiences and fostering dialogue among academics, donors and telecenter operators [Telelac] [CTCNet 1996, 1998], or developing teaching materials for low-income groups [APC].

3.7 Municipal Telecenters

Chile

The Redes Comunitarias (Community Networks) project [Salgado 1998] has help set up two telecenters, both of them in Cunco (http://www.cunco.co.cl), a town of about 20,000 inhabitants. The first of these centers is located in the municipal tourism office and started operating in 1998. The second one is housed in the municipal library and has been in operation since December 1999. Both were established under an agreement between the Universidad de la Frontera, which sees to the installation of the equipment and the design of the Internet information and service systems, the national government, which financed the initial investment, and the municipal governments which are covering operating costs. Investment requirements were as follows:

	US$
Furniture	500
1 computer (incl. software), 1 printer, 1 scanner	2,700
Materials and training	900
Total	**4,100**

[38] The form required by the Foundation is available on-line (at the web page of [InfoNetCaffé] under "Start your own"), and contains a list of the main points to be considered in any telecenter venture.

The operating costs come to US$1,100/month, including the telephone connection and Internet access, equipment inputs, and the remuneration of the center's operator.[39]

Access to the Internet is free of charge, but is not obtained by the customer himself but with the help of an operator at each center. The oldest "infocenter" is frequented by 10 to 12 persons a day. The local radio station, Cordillera, takes the news from the local and international dailies and passes it on to its listeners, many of whom live in the countryside with no alternative source of news.

Panama

As part of an IADB-sponsored project, the National Secretariat for Science, Technology and Innovation (SENACYT) has set up Infoplazas administered by Municipal Councils in Penonomé, Pueblo Nuevo and San Francisco, and by the mayoralty of Natá. Penonomé, for example, is a small town 5 hours away from Panama City. Its Infoplaza resembles that of any cybercafé or public *cabina*. It includes 8 computers and a standard software package (Office) obtained free of charge under an agreement with Microsoft. The SENACYT program is expected to provide complementary support, including the preparation of Internet content of interest to the community. The cost of setting up the Infoplaza in Penonomé came to US$20,300.[40] The rates of service to the public have been set by SENACYT as follows: (in US$)

	1st hour	**2nd hour**	**Subsequent hours**
Primary and secondary students	0.25	0.50	1.50
University students and teachers	0.50	1.00	1.50
The general public	1.50	1.50	1.50

(http://www.senacyt.gob.pa/infoplazas/tarifas.htm)

Penonomé's Municipal Council is enthusiastic and committed, essential features for success. Nevertheless, Council members have limited knowledge of the technology and of financial management and their freedom of action is constrained by their administrative agreement with SENACYT. The Council realizes the importance of achieving financial self-sufficiency. An exploratory review of anticipated income and expenditures conducted on February 22, 2000 together with some Council members, clearly showed that the proposed tariff structure was going to be insufficient to cover expenses. Initially the Council adopted a different more realistic price structure, but this was subsequently disallowed by SENACYT.

By the end of January 2001 Penonomé's Infoplaza is far from achieving self-sufficiency. Notwithstanding immense community interest and demand, hours of operation have been reduced because of the Center's inability to meet staff costs. The Council feels it cannot continue bearing the burden of the Infoplaza's operating losses.

[39] Data based on estimates of the initial project at Temuco in 1997 (converted to US$ at the exchange rate of $435 = US$1. For details see [DIIUC 1999].

[40] Includes US$13,250 in hardware, US$2,800 in furnishings including air conditioning, and US$4,500 to condition the premises.

Paraguay

The municipal government of Asunción, Paraguay, has set up 12 telecenters called **Aulas Municipales de Información, Comunicación y Aprendizaje, Amic@as,** at different locations in the capital: from cosmopolitan neighborhoods such as in the Centro Cultural de la Ciudad (City Cultural Center) in Manzana de la Rivera, to low-income neighborhoods such as the first Amic@, established in 1998 adjoining the bus terminal (see [Fontaine 1999], [Aranda 1999] and [Learn link 1999]). Each Amic@ has a server, a printer and three or four multimedia computers, and orients its activities to the needs of its neighborhood. For example, the Terminal Amic@ provides Internet access to many informal-sector merchants and workers. Special activities are aimed at the local shoeshine boys, which have essentially deserted electronic games and clandestine gambling for computers and web page design. The Amic@ in Manzana de la Rivera offers virtual visits to museums on-line. The one in Trinidad concentrates on training local residents in the rudiments of computer operation and browsing. The Amic@ at Marangatu Rape is housed in a municipal school in an emerging population center and is adapting its services to the needs of the community and its school children.

The Amic@s project also aims to place on line an interactive data, services and payment-for-municipal services system. Cyberconferences have been arranged in which the Mayor replied to questions from the public through a specific channel and over Real Radio. In the last elections (1998), a system was introduced with the endorsement of the Electoral Justice Bureau that allowed citizens to determine on-line which of the polling places was where he should vote.

USAID funding through the LearnLink project has provided the investments and technical assistance required by the Amic@s. The city government pays for operating and maintenance costs, making a regular contribution that finances the cost of supporting a Technical Unit at the central level (1 professional plus occasional technical support) and covers the operating costs of the individual Amic@s (1 or more persons at each center depending on the needs). Each Amic@ has a management committee set up to represent the community and to oversee the functioning of the center. Each committee draws up regulations governing use that are subject to the general norms established by the Technical Unit. Access to Amic@s is in principle free of charge, but, for example, the Bus Terminal Amic@ has established a small fee, equivalent to about US$0.29/hour, to help pay for the center's costs.

The Amic@s have been in an opening phase of experimentation that ended in January 2001. Several formulas have been under study for subsequent stages, including conversion of the management committees into non-profit associations to reinforce management and administration, and bringing representatives of the municipal government and private enterprise into the decision-making process.

Peru

Located in a low-income neighborhood of Lima (Villa El Salvador), the Villanet *cabina publica* is an example of a municipal venture in association with private enterprise. The present owner is a former employee of the Popular Communication and Development Promotion Center of Villa El Salvador (CECOPRODE VES), an NGO that runs a radio and television station broadcasting to Villa El Salvador residents. In 1995 the British Council sponsored the establishment of a Local Information Unit in Villa El Salvador. The venture was based on e-mail with dial-up service. The project included a two-day "Municipio Cibernético" (Cybernetic Municipality), an event which enabled the interconnection of computers and allowed the population to participate in council sessions and vote on several issues of current interest.

In October 1999 the erstwhile NGO employee, now an entrepreneur, set up his own *cabina* business. He applied for two commercial loans to buy the hardware and entered into an agreement that lets him use the municipal government premises in exchange for extending the dedicated 64-Kbps line to the city government offices. He began with 8 computers and by mid-2000 had 13. The rates to the public are US$0.58 in the morning and US$0.72 after noon. Villanet is always in close touch with the municipal government, the community and the owners of the 7 *cabinas* operating in Villa El Salvador, all of who know each other and are friends. A series of virtual conferences was begun on May 4, 2000, with RCP's participation. The first of them, organized by Villanet and the municipal government, was on "The Internet and its influence on global communication." In addition, an e-mail account has been opened for each alderman through which the citizen can send his inquiries and claims.

3.8 Multipurpose Telecenters

International agencies (ITU, IDCR, UNESCO) have been the main sponsors of experimentation with multipurpose telecenters. The ITU, for example, has negotiated for or set up pilot projects in Benin, Bhutan, Honduras, India, Mali, Mozambique, Suriname, Tanzania, Uganda and Viet Nam. While some have been set up in urban areas, these centers have been envisaged primarily to make up for the lack of services in rural settings and to address the particular difficulties that rural areas present.

Multipurpose telecenters differ from others by the broad variety of services offered. Ernberg [1998, p. 6] has proposed that they provide, for example:

> **public services** in telecommunications, distance education, telemedicine, ordinary mail, a venue where water supply and electric power agencies assist the public, user support and training, and the generation of information tailored to the needs of the host community;
>
> **private services** such as banking, office and equipment rental, support to small and intermediate enterprises, and individual Internet service.

Participation by private businesses is seen as an indispensable means of generating income and make these centers self-supporting.

Ernberg [1997 and 1998] has emphasized the experimental nature of multipurpose centers, the need to develop sustainable management models and the importance of not being carried away by enthusiasm and investing too much in these experiments until their sustainability has been demonstrated. Established multipurpose telecenters have generally won the community's appreciation, but have yet to establish themselves as a sustainable model. The Nakaseke telecenter in Luwero, Uganda, for example, is an exemplary model, but its replicability is often called into question because of its high cost and dependence on donor funding [Benjamin 2000, p. 16].

In Latin America and the Caribbean, the ITU has helped found four multipurpose centers in Brazil (1992 – 1993), two in Suriname (1996), and another two in Honduras (inaugurated on May 2000).

The Brazilian centers were part of a pilot experiment with ambitious plans that envisaged the installation of a total of 13,000 centers by the year 2000. The project was led by Telebrás when that enterprise was still a government monopoly. Each center functioned as an association of public and private enterprises, each of which managed its own business within the center under the gen-

eral auspices of the government. Launched before the upsurge of the Internet, they occupied premises averaging 450 to 500 m^2. The center in the town of Brusque (60,000 inhabitants), in Santa Catarina, for example, had telephone booths, public services (water, electricity, tax offices), computer training, business counseling, office support services (computers, office rentals, fax), and access to data bases. The cost of setting up these centers (in 1992 and 1993) averaged US$70,000. The centers were closed when Telebrás was privatized and the new management terminated the project.[41]

The concept of public service centers has stayed alive in Bahía and other states, where Citizen Services Centers (*Serviço de Atendimento ao Cidadão*, or SAC) have been set up with state government financing and administration and with IADB support. SACs have been placed at strategic locations where large numbers of people converge and there are also mobile SACs to serve rural communities. The SACs combine mostly public services of the different levels of government (federal, state and municipal) under one roof. At the *Liberdade* SAC, for example, the citizen can obtain an identity document, a driver's license, birth certificates, authorization for travel by minors, and tourist information. Access to computers or the Internet is not provided.

An evaluation of the two multipurpose telecenters established in Suriname (Ernberg 1998, pp. 16-18] found minimal implementation of the initial service development plan, and cited among the principal weaknesses the failure to mobilize resources, introduce and develop services, train users, establish links with other organizations, and neglect marketing and promotional aspects.

The ITU has again taken up the rural challenge in Honduras with two experimental multipurpose telecenters: one in Valle de Ángeles (3,500 inhabitants) and another one in Santa Lucía (1,500 inhabitants) [Bastidas-Buch 1999]. At the Valle de Ángeles center (http://www.itu.hn/cpt), total investment was about US$32,000. Apart from the hardware requirements of any basic telecenter,[42] the center in Valle de Ángeles has specialized equipment for telecommunications via radio packets to extend its connection and provide telephone and Internet services for neighboring communities (15,000 inhabitants in scattered settlements) and to support experimental use of modern information and communication technologies and training to other rural telecenter ventures in Central America. The rural location of the telecenter has itself made it necessary to:

i) coax the Honduran Telecommunications Enterprise (HONDUTEL) into an agreement to install a dedicated 64 Kbps channel from the telecenter to HONDUTEL's ISP server in Tegucigalpa[43];

ii) acquire a more expensive (US$1,700) router with asynchronous inputs (to enable the provision of ISP services), 4 asynchronous and 2 synchronous modems, and a 3.5-KVA surge protector/power reverser with a 6-hour capacity (US$3,500) to stabilize power during blackouts and brownouts, recharge the batteries during regular working hours, and provide power during cutoffs of the public power supply, and

[41] According to [Norton *et al.*, p. 24], Telebrás's telecenters grew rapidly, and one of them came to be visited by up to 7,000 persons/month. However, the growing sophistication of the communities served and increased availability of technology caused the growth of competition offering cheaper services. This led to a decline in demand, which, combined with increases in internal operating costs and deterioration of the hardware, resulted in the collapse of the telecenters in 1997 and 1998.

[42] Eleven computers (1 for administration), a net server, 2 laser printers, a reserve power supply for up to 6 hours, a scanner, user monitoring software, net software (Back Office), and basic office software.

[43] HONDUTEL is also one of the contributors to the project, and is providing the service free of charge during the first six months, pursuant to the project agreement between HONDUTEL and the ITU.

iii) acquire a server capable of hosting the web site, handle the electronic addresses of the users among the general public, and additional functions such as virtual telephones, gateway interconnection between the Internet and remote users of a narrowband data transmission network [Bastidas-Buch 2000].

Each center is managed by an administrative board whose membership includes donors and representatives from the public and private sectors. A salient feature is that, in contrast to other ITU experiences, in Honduras the promoter-local champion are one and the same and is located on site in Tegucigalpa, and not in Geneva. He is close to the telecenter and the locality being served and, accordingly, is readily available to attend to any problem or emergency situation that inevitably arises in projects of this nature.

The main contribution of the multipurpose telecenter model in Honduras is as an experimental initiative to help overcome the formidable challenges that the rural setting presents. Particularly noteworthy are the efforts being made to develop low-cost systems of:

i) telecenter-administration (software);

ii) web portals that enable individuals and small firms to publish their own pages online;

iii) repeater stations transmitting Internet signals using *radiopackets* and *spread spectrum* technology to serve neighboring communities and users.

It is not clear that the urban telecenter model - a single locale equipped with several computers to provide shared access - is an economically viable option to serve sparsely populated rural areas. During their first few months in operation, the two honduran telecenters have had very few visitors, perhaps one or two users per hour on average. Income earned by these centers from serving as ISPs to neighboring communities has been greater than from direct visits to the telecenters' central locations.

Furthermore, there is no reason to believe that today's computer will continue to be the standard piece of equipment in the future. No doubt, consumers prefer appliances that they can use individually, as long as they can afford them. Technology is evolving precisely in the direction of small inexpensive appliances that are individually owned, connect to the Internet and allow Web surfing, e-mail and telephony [New York Times 2000]. ITU's experimentation in Honduras with low cost equipment that permit the retransmission of Internet signals to serve neighboring communities may turn out to be a most significant contribution to overcoming the digital divide in remote rural areas.

3.9 Potentialities of Different Telecenter Models

Table 11 presents an assessment of the potential impact of different telecenter models on i) improving the well-being of poor populations, ii) replicability on a large scale, and iii) self-sustainability. The key words are **evaluation, potential,** and **tendencies**. There are too much variety, too much innovation, too much experimentation and too many very rapid changes for any definitive classification to be possible.

The commercial model offers excellent replicability, full self-sustainability (as a system, though always subject to the occasional failure of individual enterprises), but the evidence is that, though it exerts a positive impact on the target group, that impact is limited.

The franchise is a conceptually attractive model, but it does not exist in practice, at least not in the service of low-income populations.

The experiences of NGO telecenters present a wide range of variation, much innovation, a strong impact on the target population. There is also general recognition of the need to be self-supporting; at least operationally, as in most cases NGO telecenters rely on grants for the initial investment.

Table 11. Appreciation of potential impact of various types of telecenters

low cost minimal services

Tendencies

more & greater variety of services - higher costs

more dependent on market forces

Tendencies

proactive offer of services

Type	Desirable features		
	Target group: the poor	Replicability	Self sustainability
Commercial	***	*****	*****
Franchise	*	(Very limited evidence)	(Very limited evidence)
NGO	*****	****	****
University	**	**	***
School	****	****	***
Municipal	***	***	**
Multipurpose - rural	****	**	**
Multipurpose - SAC	***	***	*

* Very Poor
** Poor
*** Medium
**** Good
***** Excellent

The university model has only been detected in Peru, but attempts have been made in other countries. Since schools are more numerous than universities and have closer contact with the community, the school model is potentially more replicable and promises a greater impact on the target group. In practice, however, the school model is not much in evidence in Latin America. School systems are not prepared to handle resources, or to provide and charge for services to the public. It is interesting that one of the current experiments with school telecenters is taking place in a socialist country – China - where the rule is for the schools to generate their own operating resources by running businesses.

As is done by university telecenters in Peru, school telecenters could be established in many countries, by opening their doors to the public and charging for their services to keep the center going. In most countries of Latin America and the Caribbean this would require changes in the laws or administrative rules to enable such commercial operations. Since schools are far more numerous and widely scattered than universities, school telecenters could achieve greater penetration amongst the poor.

The experience of the Leo Ussak school highlights the importance of a visionary leader who motivates his students and shoulders responsibility for promoting the telecenter, and the importance

of the community's committed support. It is probably easier to obtain that support in the "school" than in the "university" model, since the coverage of a school tends to be more localized and parents are in closer contact with their children's activities when they are young.

Conceptually, the municipal model appears as an attractive way to link the citizenry to their local government. There is nevertheless the tendency, or at least the danger, that the center will be used to serve the individual agendas of politicians, and to subsidize all or part of the operating costs to the detriment of sustainability.

The multipurpose telecenter model is an effort to combine many diverse services in an attempt to generate enough income to cover the higher costs of operating in the countryside. The evidence available on whether this is possible in practice is not favorable. As an experimental effort to address the rural challenge the multipurpose telecenter is a worthy undertaking.

3.10 A Key Ingredient

A key determinant of success is the human element, and there are two primary agents of change. On one hand, the general promoter of the project - Rodrigo Baggio for the CDIs in Brazil, Claudio Orrego for El Encuentro in Chile, José María Figueres for the LINCOS in Central America and the Dominican Republic, John Ernberg for the multipurpose centers sponsored by the ITU, David Pines for the Cybercafé projects of the Foundation for the Future of Youth, Manuel Tejada in the case of AEDES in Cotahuasi, Martin Burt, Mayor of Asunción, for the Amic@s - play a key role in providing the vision, obtaining the resources, and driving forward remarkable ventures.

Even more important, the practical effectiveness and sustainability of telecenter ventures are closely linked to the performance of the local agent.[44] Sometimes, as in the case of the great majority of the *cabinas públicas* in Peru and other commercial telecenters in the region, the promoter and local agent are one and the same person. In other cases, the successful promoters, though they may act at some distance from the ventures they are promoting, have sill managed to devise decentralized mechanisms for coordinating the needs of the communities in which the centers operate. They have managed to integrate community participation and acceptance of the center, either by employing volunteers to operate and manage it, or by providing services that the community values as their user and are willing to pay for. In sum, if there is one overarching lesson that emerges clearly and distinctly from an analysis of the different experiments with telecenters, it is the following:

Behind every successful telecenter - whatever its type - there is invariably a person - sometimes more than one - who is enthusiastic and personally committed to the success of the venture, acts with considerable independence and is intimately familiar with the locality and community in which the center operates, and is able to articulate the community's needs and satisfy its demand for services.

[44] What the Canadian Community Access Program refers to as the "champion" [Industry Canada 2000, p. 11].

IV. State Support for Telecenter Development

The way in which the State promotes telecenter development can be a decisive determinant of sustainability. This is particularly true when the State is directly involved in telecenter management, such as municipal and university telecenters, or even when NGOs participate in public sponsored initiatives.

States have used four principal formulas to promote telecenter development: public franchises, concessions, telecommunications development funds and community investment funds.

4.1 Public Sponsored Franchises

South Africa

Since its creation in mid-1997, the Universal Service Agency of South Africa (USA-RSA) has installed a series of rural telecenters using **a variation on the concept of "franchising."** In practice, the USA-RSA franchise is more of a community subsidy system using resources from the Universal Service Fund. The latter is made up of an initial contribution from the State resulting from the sale of the previous monopoly telecommunications operator, and supplemented by contractually-mandated contributions from the purchaser, Telkom. Unfortunately, the USA-RSA's plans have proven too ambitious, and program execution has been fraught with difficulties.

The Universal Service Agency has promoted two sizes of telecenters: mini and standard, primarily in rural areas.

The USA-RSA helped establish nine mini units by contributing 50% of the investment cost. Each of these units is outfitted with a computer plus scanning and printing equipment, at a cost of $2,500. As of mid-2000 only four or five of these nine mini telecenters were still in operation. The rest closed down for various reasons, including inadequate technology (the equipment broke down frequently), poor telephone connections, and administrative problems (e.g. one center had to close because its telephone bill became unmanageable in the first month). Financial viability was also compromised when centers were installed in very remote areas where the clientele lacked basic knowledge and the entrepreneur had to begin by training them.

The South African Universal Service Agency also established 63 standard telecenters, which cost approximately $30,000 each. This amount covers: refurbishing the site, five telephones, four computers, one photocopy machine, one fax machine, one printer, one scanner, one overhead projector, one television, video equipment, and modems [Benjamin, p. 12]. In principle, the USA-RSA planned to use the same 50:50 formula (50% USA-RSA – 50% entrepreneur or community), but finding little effective demand in the communities and given the government's urgency and determination to carry out the program, the agency contributed all of the resources to establish the centers.

In mid-2000, only 24 of the 63 standard telecenters established were still operating. Of those, only two generated sufficient revenue to cover operating costs and potentially repair equipment; and perhaps eight others had achieved operational viability. The difficulties experienced include: technical, collections, and organizational problems, equipment theft, community conflicts, inadequate accounting systems, insufficient training for managers, unclear rates, and confusion over the role of the managers (e.g. some expected to receive a salary from the USA-RSA) [Benjamin, p. 14]. The two successful telecenters – in Gaaseleka (Northern Province) and Ndevana (Eastern

Cape) – were community initiatives. In both cases, the main factor in their success was having a local leader with the skills needed to run the center efficiently and as a business.

Panamá

In **Panama**, the government plans to establish approximately 20 infoplazas, each with 5 to 15 computers, in rural and suburban areas with low per capita income but high productive potential. The initiative is part of the Program to Support the Competitiveness of the Producing Sectors, financed in part by the IADB and executed by the Infoplaza Project Coordinating Unit of the Information Technology Projects Office of the Technological Development Administration of the National Secretariat of Science, Technology, and Innovation [SENACYT 1999 and 2000]. In addition to connectivity, the program is intended to provide document processing and multimedia services, prepare specialized files with cultural, economic, or social information of interest to each locality, and link infoplazas to hold virtual events and create discussion forums and other activities of common interest. By late October 2000, SENACYT had installed and opened nine infoplazas and planned to establish five more by the end of the year [SENACYT].

SENACYT designed the project to be "similar to the franchising model, but without royalty or membership payments" [SENACYT 2000]. The Infoplazas Coordination Team is a group of experts from the SENACYT staff, who in essence make up Infoplaza Headquarters. Its functions include analyzing the technical fitness of the proposed localities, installing the equipment, implementing the "community infoplazas," and preparing Internet content and databases.

An Infoplazas Foundation has been created to function as a private non-profit institution that runs the program and manages its resources. It is headed up by the National Secretary of SENACYT. Agreements between the Foundation and local partners provide a legal framework that enables the Foundation to finance investments and equipment, technical assistance for program implementation, training and continuing education, and distance technical support. It also commits the local partners to managing the "community infoplazas."

The aims of the partner institutions must be consistent with those of the program. In principle, a broad range of institutions are welcome, including government agencies, NGOs, civic groups, and small businesses. However, in practice, most local partners are government agencies. In late October 2000, the program's local partner institutions and telecenter locations were:

> Three community boards (Penonomé, Pueblo Nuevo, San Francisco) and one mayor's office (Natá);
>
> The Community Development Association of Puerto Armuelles;
>
> The National Library Foundation (Chitré);
>
> The Panamanian Tourism Institute, which has established two infoplazas (one in Pedasí and another in Pueblo Nuevo); and
>
> The government agency, Corporation of Microenterprise and Small Businesses in the Informal Sector (serving a semiurban and rural area in Panama city).

Restrictions on the actions of local partners are likely discouraging greater participation by private commercial and not-for-profit entities. To participate in the program, partners must agree, for example, to service charges set by the Foundation (www.senacyt.gob.pa/infoplazas/tarifas.htm),

which in practice may not generate sufficient revenue to cover expenses and might not be suited to local needs. This policy of centralizing key decisions tends to inhibit local initiative and compromise the sustainability of the infoplazas. Such a policy can only be acceptable to State institutions with sufficient resources to operate the infoplaza through recurrent subsidization.

4.2 State Monopoly Concessions

In countries where the State has a monopoly on telecommunications, the ability to establish a telecenter program depends primarily on its political resolve and willingness to finance the investments.

In conjunction with private enterprise and civil society, the Costarricense.com program, instituted on August 16, 2000, established a portal that makes an e-mail account and a personal web page available to all citizens, companies, or legal entities, free of charge [Government of Costa Rica]. At the same time, the program is establishing access points in the country's 81 municipalities, each equipped with five terminals and direct, permanent Internet connections at an average speed of 128 using VSAT technology. Each center will be linked to a central office of Radiográfica Costarricense (RACSA), where a server will provide access to information and messaging services.

The respective municipal councils are the official recipients of the equipment. The program, however, encourages the transfer of the administration and management of each center to NGOs committed to community development. An encounter of telecenter operators and persons and institutions providing support to the program (Omar Dengo Foundation, RACSA, universities and technical colleges, ministry of science and technology, and *Triángulo de Solidaridad*, among others), is scheduled for June 2001.

4.3 Merit-based Schemes

There are two types of merit-based schemes: telecommunications development funds and community investment funds.

Telecommunications development funds have been very effective in encouraging private investment in rural telephony; i.e. in low profit areas. They generally grant a concession and "minimum subsidy" to a centralized operator or consortium that agrees to service an area over a number of years. Typically, a project achieves scale economies by providing for numerous infrastructure access points. The firm or consortium awarded the subsidy typically services the project area under a commercial franchising scheme. These funds are beginning to be used to promote investments in telecommunications infrastructure that provide not only telephone service but also data transmission and Internet access through telecenters.

The second type of merit-based schemes is community investment funds, where the communities vie for resources. By design, the proposals financed tend to reflect the aspirations, capacity and needs of the locality.

Telecommunications Development Funds

Chile

On February 2, 2000 the President of Chile sent a proposal to congress to expand its Telecommunications Development Fund to allow its resources to be used to subsidize the establishment of

telecenters in rural areas of the country. According to President Lagos, "Chile must be on the forefront of countries using information technology, particularly the Internet, as the engine of new progress…"; the establishment of a "pioneering network of public infocenters to provide high-speed Internet connections to thousand of Chileans" is a key part of his administration's program [Government of Chile 2000].

An interdisciplinary research group from the *Instituto de Informática Educativa* of the *Universidad de la Frontera* (IIE-UFRO), with funding awarded through the National Fund for Scientific and Technological Development (FONDECYT), has implemented a project in Araucanía that includes: i) the design and operation of a portal with community-interest information; and ii) the establishment of telecenters in Region IX. Initially, telecenters were established, one each in Cunco and Temuco, but the latter closed due to an apparent lack of interest from municipal authorities. The portal of the Region IX Community Network [IIE-UNFRO], developed as part of the project, is extensive, with information on subsidies, food, health, education and culture, housing and basic services, production and labor (including information on markets and prices of agricultural products in different markets), legal and judicial assistance, and sports and recreation. The *Universidad de la Frontera* project is exemplary and has helped galvanize national policy in support of rural telecenter development [Contreras, Varas, and Hojman 1999].[45]

Subtel is implementing a pilot project involving five telecenters in Araucanía, each equipped with four to five computers and the development of a portal with information of local interest [CORFO 2000]. The initiative is expected to feed the design of a proposal to install 90 rural telecenters throughout the country [Espitia 1999]. Eventually that project is to be expanded until there is total coverage of all of the country's 341 communes, during the course of the present administration's six-year term.[46] A consortium headed up by the *Universidad de la Frontera* has been selected to execute the 5-telecenter pilot project.

Both the *Universidad de la Frontera's* initial project in Cunco and Temuco and the pilot project presently under way have been awarded competitively, following tender procedures similar to those used by the Telecommunications Development Fund. The procedure for installing the 90 telecenters to be developed by Subtel is still undetermined, but will most likely follow a similar scheme.

[45] The final report of the Presidential Commission on New Information and Communications Technologies [1999, page 81] recommended, as one of eleven "1999-2000 Emblematic Measures for Take-off," an expansion of the scope of the Telecommunications Development Fund and its rural telephony program to enable the promotion of a "program of community telecenters connected to the Internet," based on the *Universidad de la Frontera* experience.

[46] There are several telecenter development initiatives in Chile. One includes using the school connectivity, which is being achieved through the *Enlaces* project to establish school telecenters for use outside of the school day. Another one involves establishing telecenters at mail posts throughout the country. A more recent initiative, being launched in 2001 with assistance from the Bill and Melinda Gates Foundation, provides for the establishment of computer stations connected to Internet in all of the country's libraries.

Peru

The Peruvian government established the Telecommunications Investment Fund (FITEL) to finance telecommunications services in rural areas, where there low profits discourage private investment in telephony. FITEL is funded with 1% of gross annual billings of the telecommunications companies operating in the country, as well as external and internal credits and third-party contributions. FITEL is run by the Oversight Agency for Private Investment in Telecommunications (OSIPTEL) and operates on the basis of international competitive bidding, awarding concessions to proposals that meet predetermined technical specifications and require minimum subsidization.[47]

For the period 2000-2003 FITEL has set as a target the extension of voice, fax and low-speed data transmission services to 5,000 rural communities [Velasco 2000]. To meet these targets FITEL has awarded the following projects:

Project	Targets		Date awarded
	Public telephones	Telecenters	
Pilot project along the Northern Border	213	-	May 1998
Southern, South Central, and Northern Jungle projects	1,937	236	30 November 1999
North Central, East Central, and Northern projects	2,290	255	28 September 2000

FITEL uses a two-step method to select the desired location of public telephones. First, a desk-study phase helps identify needs using common parameters such as, for example, the number of inhabitants per community that are have no infrastructure. This is followed by a dialogue-phase with authorities and residents of pre-selected communities to identify the most suitable points to provide optimal service to the area. The purpose of these studies is in part to meet telephony needs, but they also provide detailed information that helps enterprises competing for FITEL subsidies better assess market risks. Thus, by reducing uncertainty about the market to be served, the studies help lower the size of the premium that companies require in order to deliver the service.

The 490 telecenters planned under these rural telephony programs are fairly basic. They provide for a single computer terminal with Internet connection at a speed of 9,600 bauds per second. Nonetheless, FITEL also has other new projects in its portfolio, in which Internet links and the establishment of telecenters play a more prominent role. First, there are a series of Pilot Telecommunications Projects (PPT) aimed at fostering innovative social initiatives. Financing is granted for a one-year execution period (fully or partially reimbursable) up to a maximum of US$75,000 in services (such as training and management) and US$220,000 in goods. Secondly, FITEL also has plans for a more ambitious program – with an estimated cost of US$26 million – to develop cabinas públicas in 1,142 rural district capitals that are currently without service.

Colombia

Colombia has launched a major telecenter development initiative as part of the country's overall Internet connectivity strategy [Presidencia de la República]. The Ministry of Telecommunication's COMPARTEL - Social Telecommunications Program has 3 phases, as follows:

[47] For details on FITEL projects, please see http://www.osiptel.gob.pe/fitel/frames/fr4.html.

Main Features	Phase		
	I. Rural Community Telephony and Internet	**II. Residential & Community Telephony**	**III. Social Internet**
Public phones	6,745 public phones in towns < 250 inhab.		
Residential telephony		38,000 lines; 339 towns	
Dial-up service			40 communities
Community Internet Access Centers (CACI)			
1 computer & 1 printer	670		
3 computers +		175	< 30,000 inhabitants
6 computers +			30,000 - 200,000 inhab.
12 computers +			> 200,000 inhabitants
Total No. of CACI	**670**	**175**	**270** (a)
Average per unit subsidy	US$ 5,554/telephony US$ 9,229/CACI	(b)	US$ 28,878/CACI
Technology	70% VSAT; 30% cellular		VSAT (c)
Company	Gilat		Telefónica
Implementation Plan	Installation started in March 2000;	2001 – 2002	Installation started in Jan 2001 and is due for completion in Dec. 2001

+ Additional services provided under COMPARTEL III: Color printer, fax, scanner, videocamera & 2 telephone lines

(a) In all, a total of 261 towns with more than 10,000 people will be served. About 100 of the CACI will be located in towns with more than 30,000 inhabitants.

(b) The first tender attempt last year failed to encourage any firms to participate in this second phase of the program. The program has since been redesigned to provide for shared access as opposed to individual home telephone lines. The latter appear to be more compatible with the low-income payment capacity of the target group.

(c) Telefónica is using VSAT equipment purchased from Hughes.

The Internet Community Access Centers (CACIs) being installed under the program's first phase provide a valuable service, in the form of relatively slow Internet connection (effective surfing speed of 1 Kbps), to users located in small and remote communities with less than 250 people (e.g. police outposts, indigenous reservations, national parks). The more ambitious Social Internet III program comprises 3 CACI options (3, 6 or 12 computers each), depending on town-size, and offers a higher quality of service (a minimum effective surfing speed for each user of 4 Kbps).

Telefónica is running the Social Internet III operation as a commercial franchise and is inviting entrepreneurs in the selected municipalities to participate. The contract with the Ministry of Communications runs over a 6-year period. The program envisages 1 year of implementation and obliges the firm to 5 years of actual service starting after the last of the centers has been established. This 5-year obligation is irrespective of profitability during this period. The government's subsidy is granted during the first year, contingent upon the firm's ability to meet specific installation targets. The approach motivates the firm to complete these targets, even ahead of schedule, to get hold of the subsidy as soon as possible.

According to the contract, the cost of Internet service to the user cannot surpass $ 1,500 (equivalent to US$ 0.74 – May 2001) and similar maximum fees are predetermined for the other services rendered (e.g. training courses cannot exceed the same maximum of US$ 0.74/hour). Other contractual obligations include:

each CACI must be open to the public for a minimum of 12 hours of service a day – 7 days a week,

training courses must be imparted to users on the following subjects: introduction to computers and complementary equipment, Internet surfing, e-mail. Search engines, chat rooms, use of tools for web page making);

a minimum number of applications software must be made available (e.g. encyclopedia, children's stories, academic reference, interactive games); and

an initial web page with regional information needs to be provided (news, events, links to sites of local interest).

The particular location of each center within the specified communities is subject to COMPARTEL's approval to ensure community impact and prevent any unfair competition that might result if a subsidy-supported telecenter were to be sited next to a non-subsidized establishment providing a similar service.

COMPARTEL gives latitude to the firm in its choice of business model. Telefónica is running the program as a commercial franchise (see www.ami.com.co). It provides franchisees with: i) the required equipment and software (computers, satellite antenna, hub and network and connectivity software, applications software), training of staff (e.g. in basic applications, equipment operation and Internet use); the installation of the required cables and equipment, the basic furniture, lighting, and paint and furnishings. The franchisee in turn is required to provide a suitable locale in which to set up the CACI, the staff in charge of day-to-day operations, and the equivalent of US$ 3,900 to cover some of the running costs (e.g. energy), and agrees to share a proportion of collected revenues.

The Colombia example illustrates an interesting feature of the telecommunications fund approach. Once the operator has made the infrastructure investment needed to satisfy his contractual obligations, it may be profitable for him to establish additional telecenters, at least in the larger towns within the area served. Under Social Internet III, Telefónica is for example obliged to set up 270 telecenters, but is instead planning to establish a total of 329, the additional 59 at own risk and under its own terms.

Community Investment Funds - The Canadian Experience

Canada wants to become the most Internet-connected country in the World. To this end government has launched several initiatives, including the Community Access Program (CAP). [48] Since its inception in 1994 the CAP has helped establish 10,000 public access points in rural areas of the country with fewer than 50,000 inhabitants. There is also an urban CAP for underserved urban areas.

[48] In addition to CAP, there are initiatives aimed at improving the capacity of volunteer organizations by providing access to computer equipment (VolNet); installing computers in all classrooms in all of the country's schools and connecting them to the Internet (SchoolNet); and a parallel program to employ young people (Youth Employment Strategy) [Industry Canada 2000, page 3].

The description of the CAP given here is based on the proposal guidelines in [Industry Canada 2000] and [Government of Newfoundland and Labrador 2000].

The CAP is funded by the national government and by provincial governments. In general the program gives partial grants covering about half the cost of setting up an access center, up to a maximum of US$13,470 (US$11,450 in urban areas), to "community groups with broad public support". A broad range of organizations qualify for assistance, including youth groups, regional development boards, development associations, tourism organizations, chambers of commerce, schools, libraries, learning centers, municipal governments, computer stores, and small and intermediate businesses. The community's contribution may be provided in-kind. CAP's resources may be used to buy hardware and pay staff salaries and technical support.

In general, a public access point financed jointly by the community and the CAP must provide:

- access to the Internet through a browser, for example, Netscape or Internet Explorer;
- enough band-width for comfortable and efficient browsing at speeds of at least 19.2 Kbps;
- the capability to send and receive e-mail;
- the capability to create and design community web pages;
- facilities for physical and electronic access by disabled persons;
- space, equipment and other facilities to enable users to become skilled in the use of the technology and the Internet and, barring exceptional cases, not less than 4 or 5 computers;
- document reproduction facilities;
- access to on-site technical support;
- software for basic applications such as an e-mail reader and chat rooms, and an audio and video projector, and
- at least 20 to 25 hours of operation a week, an important part of which must be at night time and on weekends.

The merit of each proposal is evaluated by a CAP *Review Committee* located in each province or territory, functioning independently of the government, and consisting of notable persons from the community experienced in such areas as community development, business and trade, social development, digital networks, and education. This committee is supported by an administrative secretariat that is usually paid by the provincial government. The main project selection criteria are:

i) The proposal must be presented by a consortium of at least 3 (often 4 or 5) institutions with a clear mandate for community service. (Some of the partners may be private businesses).

ii) A CAP project must be covered by a contract between the applicant and the government specifying responsibilities. One of the nonprofit organizations that is

part of the consortium assumes overall responsibility and signs the contract on behalf of the consortium.[49]

iii) The proposal must demonstrate a clear need of access for the community (for example, access is unavailable less than 20 km. away).

iv) The proposal must be feasible and financially self-sustaining.

v) Qualified human resources must be available.

Within 18 months of having been set up, each CAP-sponsored site must be operating in the black either with resources of the community (by employing volunteers, for example) or by charging for services rendered. The intent of the CAP is that, if a center ceases operations, its assets will continue to provide access. If a center finds itself obliged to close down, the assets must be donated to a school, library or some other nonprofit institution whose daily functions include services to the public.

As the CAP has matured it has established procedures conducive to telecenter sustainability and to the transparency of the grant award process.

i) The Proposal Review Committee is made up of a group of people that carry out this assignment independently, even though it receives technical backstopping from government. People in the committee are prestigious people experienced in community development, business and trade, social development, digital networks and education.

ii) The requirement that the proposal be put forth by a **consortium** as opposed to a single institutions, has a dual purpose: to avoid competition between two institutions in the same community for different projects, and to achieve a broad and varied service coverage (in keeping with the different orientations of the members of the consortium). The latter helps increase the size of the clientele and the intensity of use of the CAP (and thus potential revenue and sustainability), as each institution encourages its own constituents to make use of the facilities.

iii) Some Canadian provinces also provide technical assistance to communities preparing CAP proposals. They designate a technical coordinator that gives assistance during project formulation. In practice, this technical assistance also helps filter bad or incomplete proposals during the project cycle. It is not until communities have put together a technically sound proposal that their project is presented to the Review Committee for consideration and funding.

iv) In 2000 CAP started promoting the presentation of proposals by groups of communities. This helped expedite the formulation and approval process and, at the same time facilitated networking economies as well as economies of scale in infrastructure development.

v) The Selection Committee reviews proposals on a periodic basis. At first the selection of projects to be financed was done once a year; but changed to quarterly during the

[49] Of 4,500 sites financed as of mid-2000, only in two instances -- in small villages located in very remote areas -- had businesses been allowed to be the lead sponsor.

last two years of the program. Any proposal that was discarded in any one selection round could be revised to rectify any shortcomings and resubmitted during a subsequent selection round. This enabled the Committee to say no, without that decision being definitive; thus reducing the pressure bearing on the Committees to approve bad proposals.

A critical period for the CAP program started on March 2001, when the disbursement phase of many CAP sites concluded. From this moment onwards, these facilities will have to rely on their own resources to continue in operation.

The only evaluation of the CAP program available has been done by Pfiester and Colle [2000]. They emphasize that the more successful CAP sites are those that become small "nonprofit businesses", where classes are imparted, the faciities are rented, Weg pages are designed for local firms, documents are produced and published for a fee, and practically every service is sold. In New Brunswick, for instance, CAP sites offer more than 300 online courses, covering a wide variety of topics including, for example, "child care and development", "Job and career development networks", and "how to train your dog". The French school Carrefour in Charlottetown, Prince Edward Island, has constructed in its CAP site a music studio enabling local artists to make themselves known. The CAP site of the Caledonia, Nuova Scotia, museum publishes and sells , calendars, historical books and cook books.

4.4 Comparative Summary of State Support Schemes

Table 12 summarizes the characteristics, capabilities, and limitations of the four formulas for government support of telecenters considered in this study. Merit based schemes are the more promising ones, in terms of prospects for yielding well managed, politically balanced, and financially sustainable telecenter programs.

- **Telecommunications development funds** relegate the administration of telecenters to private companies, while community investment funds rely more on the not-for-profit civil society sector. Telecommunications funds have been very successful in developing telecommunications infrastructure in rural areas. There is limited experience applying them to telecenter development. The implementation formulas are being adjusted to ensure access by and training for underprivileged groups, and to give priority to decentralized management schemes that rely on local initiative.

- Canada has had extensive experience using **community investment funds** to establish telecenters. In principle, this system maintains close ties to the community, however its implementation may not be always practicable. When substantial expansion of the telecommunications infrastructure is needed, the economies of scale can be significant, making it necessary to centralize the investments. Reaching agreements on a large number of local initiatives at the same time could be a complex undertaking.

Table 12. Public Support Systems - Salient Features, Sustainability, Limitations and Risks, and Risk Mitigating Strategies

System	Salient Features	Determinants of Viability & Sustainability	Limitations and risks	Risk Mitigating Strategies
Public Sponsored Franchise	The State or a parastatal enterprise promotes and helps administer a series of telecenters under a franchise scheme managed by a head unit that provides financing & technical support to franchisees.	Some **scale economies** can be achieved, through bulk purchase of equipment, web portal management and design, and training.	The problems commonly associated to public provision of private goods often arise: **rigid centralized management, admin. inefficiencies and susceptibility to political pressure**.	**It is best not to follow this option.** It has yet to be proven effective as a sustainable means of achieving economies of scale and decentralized management.
State Concession	The State telecommunications monopoly develops infrastructure and turns over management of facilities on consignment to local entities.	In principle, **scale economies** (infrastructure, content, training) may be achieved.	Risk of **political interference** in concession award process may be high.	This scheme **may be suitable where the state still runs telecommunications monopoly**. Special effort is required to engage civil society in the management of facilities in a decentralized participatory fashion.
Telecom. Development Fund	A sizeable subsidy is granted for each project as a result of a competitive bidding process. Tender documents specify the level of service and number of sites to be served, and a subsidy is awarded to the proposal requesting the smallest subsidy. The firm or consortium that wins the bid agrees to provide service to large number of rural communities over extended period (5 years in Colombia), predominantly under commercial franchising.	Has proven to be an effective mechanism for expanding rural telephony (Chile, Colombia and Perú). Profits from **scale economies in infrastructure** and can do similarly with content development and training.	Application of this mode of public support to telecenters has been limited. Telecenter management is more demanding than public telephone booths. The former involves not only infrastructure dev. but also user training and thorough knowledge of local milieu. Commercial franchises could favor profits and ignore special needs of low-income groups.	The success of burgeoning initiatives (e.g. Colombia's) deserve close analytical monitoring. Future tenders should consider a variety of criteria rather than a single "minimum subsidy" approach. **Decentralized systems of management** should have high priority. Special measures are needed to ensure low-income groups receive training and benefit from the initiative.
Community Investment Fund	Many small grants are awarded to a consortium of civil society organizations lead by an NGO that assumes responsibility for telecenter implementation and operation. These grants are adjudicated to proposals that meet previously specified feasibility criteria including a parallel contribution. Canadian government has established 10,000 community access points in rural areas using this method of support (and has a similar program for urban areas).	**Scale economies** (mainly bulk purchasing) may be achieved. Derives significant benefits from **economies of decentralized user-oriented management**. **Helps build social capital.**	Community Investment Funds are difficult to apply in regions with severe lack of infrastructure, because the economies of scale from infrastructure development are beyond the reach of individual communities. Where infrastructure is adequate and the use of Community Investment Fund schemes is applicable, **political interference** is the greatest potential risk.	**Is most appropriate in areas with good connectivity. More difficult to apply where infrastructure development is required.** Chances of success are enhanced by: i) transparent systems of awarding grants; ii) proposals in consortium to aggregate demand and prevent competing submissions from same locale; iii) flexibility in accomodating local requirements, iv) technical support to communities preparing proposals; v) allowing resubmission of proposals once defects have been corrected. vi) consolidation of proposals put forward by various communities.

V. Connectivity, Training, Content, and Networks

5.1 Connectivity

Broadband and Services

Adequate transmission speed is key to a rewarding Internet experience. A novice using slow equipment to surf an interesting portal that is loaded with graphics, will find the experience frustrating and unproductive. With time, the problem is becoming worse: the complexity of web pages is on the rise and more sophisticated applications for practical use in telemedicine, videoconferencing, and distance education are being developed that impose greater broadband requirements.

The term "broadband" implies high capacity sufficient to transmit sound and video and complex, multimedia pages. Definition vary widely: at least 200 Kbps [NTIA- RUS 2000, p. 6], at least 2,000 Kbps [Jensen and CSIR 1999, p. 5], or roughly 10,000 Kbps [CWT 2000, p. 13]. Below are the requirements of some common applications (see [Jensen and CSIR 1999] and [NTIA-RUS 2000]):

Application	Kilobits per second (Kbps)
Text – e-mail transmitted at a rate of 3 pages per minute (10 pages if compressed)	2.4
AM monaural sound or small video clips (20% of the screen at a rate of 3 or 4 frames per second)	14.4
Stereo sound – video clips	28.8
Low-resolution videoconferencing (compressed)	200
VCR-quality television (compressed)	1,200
Broadcast television (compressed)	2,000
High-resolution television (compressed)	20,000

In urban areas, there are different broadband connectivity options, such as fiber optics and cable television, that urban telecenters can easily use. The main infrastructure investment has already been made and can be extended to serve a fringe area at a relatively low additional cost. However, that is not the case for rural areas that do not have infrastructure in place.

Rural Connectivity

The most common type of connection in rural areas of Latin America and the Caribbean, where available, is via switched telephone service. This allows for transmission no faster than 56 Kbps using a standard V90 modem. Extending the network of fixed telephone cables would require an enormous investment that cannot be justified in most cases, given the prevailing low population density and limited ability to pay. The same is true for other modes of physical transmission, such as DSL, ISDN, coaxial cable, and fiber optics; even though those technologies promise to substantially increase high-capacity connectivity in metropolitan urban and outlying areas in the region.

Wireless transmission holds the most promise for broadband data transmission to rural areas. This technology uses part of the electromagnetic spectrum –between 30 Mz and 300 Gz– that requires line of sight transmission. There cannot be more than one signal per locality, so competitors are assigned different parts of the spectrum in national space – usually by a state regulatory agency.

First- and second-generation **cellular telephony** were designed for voice transmission and later adapted for data transmission and offer reduced broadband – typically under 14.4 Kbps. The personal communications systems (PCS) being developed (third generation) promise higher speed, however reaching the speeds offered by fixed wireless technology is going to be difficult [CWT 2000]. The mobility requirement tends to drive up the cost of system administration.

Some experiments with **"last-mile" solutions** to extend the reach of the fixed telephony network include:

> The Communications Systems for Rural Health Facilities project, sponsored by Engineers without Borders and *Universidad Politécnica de Madrid* with financial support from FITEL, will offer **limited services** – e-mail for medical consultations from the Peruvian Amazon – through a combination of seven fixed telephone service nodes and radio links to small health posts (see [Escudero 2000] and [Velasco 2000]).
>
> In South Africa, there is a combination of satellite broadcast of Internet signals (download) and the transmission of local requests from three schools using low-speed radio links (uplink) to a telecenter, which in turn is connected through switched telephone service to an ISP.
>
> **Local Multipoint Distribution Service** (LMDS) technologies involving wireless retransmission from a radio antennae up to roughly 10 km[50] are one noteworthy option, especially to extend connectivity to relatively flat zones in nearby rural areas. This technology only recently became available[51] but has great potential, especially for providing broadband services (up to 10 Gbps) if the base telephone connection permits. Its dissemination to date has been limited (see [NTIA-RUS 2000], [Coll 2000], and [Virginia Tech]).
>
> Both ITU rural telecenters in Honduras are providing Internet service to roughly 10 localities in the surrounding area; half use spread spectrum technology and half, packet-radio. In most of these localities, solar power units are needed to operate the minicenters.

The technical options for extending **Internet services to remote rural areas with irregular terrain** are quite limited:

> Many prospective projects involve low orbit satellite constellations that could turn the ideal of rapid universal transmission regardless of distance into a reality, however such projects have yet to materialize.
>
> Two-way transmission from a geostationary satellite –35,000 km from Earth– using VSAT technology is a low-cost alternative increasingly being used in Latin America and

[50] In principle, the signal could be retransmitted through intermediate repeater stations to reach greater distances. This is not done in practice since there are cheaper alternatives.

[51] In the U.S. it only became available in 1998, when the portion of the electromagnetic spectrum from 28 to 31 GHz was opened for sale.

the Caribbean to serve **large rural expanses with low population density** (see Costa Rica, section 4.2; India, section 3.3; and Peru, section 4.3).

In principle, VSAT technology offers broadband data transmission at a relatively low cost – regardless of distance, but subject to major economies of scale. Let's suppose, for example, that there is a series of telecenters, each equipped with ten computers; the cost of the VSAT parabolic antenna and the corresponding equipment for each telecenter could be roughly US$2,500. However, the cost of the hub that manages the signals from the individual antennas/units (telecenters in this case) ranges from US$400,000 to US$1,000,000 depending on the number of units, the configuration, and the services required. In short, establishing a telecenter in just one remote area is not economically feasible in most cases. Instead, a series of telecenters has to be established – at least 100, for example.

5.2 Training

Most telecenters provide some form of user-training. Training often plays a central role in the initiative, as seen with telecenters sponsored by NGOs (for example, Peñanolén, CDI in Brazil) or international organizations (ITU in Honduras). Even commercial telecenters regularly offer some type of training, even if it is just one or two hours of computing, e-mail, and basic surfing, as a way to attract inexperienced patrons. It is common for users to use cybercafés to familiarize themselves with computers and the Internet as a first step before buying their own equipment.

Some commercial telecenters offer more complete training programs. Cibermaster, in the small village of Urubamba, Peru, offers a two-month course on office applications (word processing, spread sheets, data processing) as part of a marketing strategy that allows it to charge differential rates to its various types of client. Young residents of Urubamba commonly sign up for a low-priced course, while foreign visitors, who generally do not need nor have time for courses, pay a rather high rate for Internet service ($2/hour).

Telecenters **must be viewed as a supplement to - not a substitute for - national formal education programs.** These formal programs are essential today and must familiarize students and professors in particular with new technologies. The Computer Education Program in Costa Rica, financed by the Ministry of Public Education and executed by the Omar Dengo Foundation, is one example of the effective implementation of a long-term, visionary policy. Since 1988, the program has been promoting the smart, creative use of information and communications technologies by Costa Rican children, helping them to make effective use of these technologies and develop their problem-solving abilities. The ministry contributes the administrative resources, equipment, and much of the human resources; the Foundation contributes the management and work methodology, produces educational materials, and executes training programs for teachers. The program operates in remote rural areas and urban fringe areas. It is present in every canton in the country and delivers services to 50% of Costa Rica's schoolchildren, from preschool to grade six, i.e. roughly 223,000 boys and girls per year (see [FOD] and [Verdisco and Navarro 2000]).

5.3 Content

Existing information on servers in Spanish and Portuguese has been and continues to be scarce; in many countries, available information on localities outside the capital and the country in general is very limited. Some of these shortcomings can and are being overcome by portals run by private enterprise, and some commercial telecenter operators have developed notable Spanish-language

portals that have become lucrative businesses alongside the telecenter.[52] Nonetheless, rural users and indigenous communities in particular do not always find sites with information in their language on topics of interest to them. Educational materials aimed at the low-income population are virtually nonexistent.

The simultaneous development of content and telecenters has been important during the pioneer phase of reaching out to a marginal area or disadvantaged population. Nevertheless, **as the quantity and quality of Spanish- and Portuguese-language content develops, this link will cease to be essential.** InfoAgro in Costa Rica (http://www.infoagro.go.cr), the Rural Information Network in Mexico (http://www.laneta.apc.org/rir/), the Rural and Urban Development Information System (InfoDes) in Cajamarca, Peru (http://www.infodes.org.pe), the Region IX Community Network (http://www.temuco.cl/RedComunitaria), the Brazilian Service to Support Microenterprise and Small Business (http://www.sebrae.com.br), the Canadian Technology Network (http://ctn.nrc.ca), and the PEOPLink portal for marketing crafts ([van der Vliet 2000] and [PEOPLink]) are virtual centers that, while maintained through interaction with the target communities, operate independently of telecenters.[53] This point is key, because the **development of truly useful, up-to-date content is important but it is also a costly, specialized undertaking, that involves financial considerations that are quite different from those of a telecenter or group of telecenters. Accordingly, its merits need to be examined separately.**

Some **content clearly needs to be developed and maintained by the State**: distance education, telemedicine, State procurement systems, electoral information and public information consultation systems, payment of taxes, labor exchanges aimed at the poor population, etc. [Stiglitz, Orszag & Orszag 2000].

The development and maintenance of information systems accompanied by portals and content to promote e-commerce, civic participation, or the cultural presence of a **small village in a remote rural area** poses a different problem. Outfitting the ITU telecenters in Honduras with a network server and site describing the area or community where it operates – Valle de Ángeles and Santa Lucía – has been very useful to help acquaint novice rural users with the Internet and its possibilities as a development tool [Bastidas-Buch 1999]. It is difficult to believe that private enterprise will meet that need. However, it is also not easy to identify the conditions under which an information system and local content portal will be sufficiently useful in order to justify the cost of launching and maintaining it.

The most notable effort to develop a system/portal for the management, easy construction, and local maintenance of content is being conducted by the Canadian CAP program. The investment cost for the portal – called Access.ca, which is still in the design phase – is estimated at US$90-150 million, depending on which of the options being discussed is selected [Government of Canada 2000]. Maintaining the site is estimated to cost US$68 million per year. Depending on the initiative's success, the Canadian government plans to either transfer the site to private enterprise or NGOs or to have the central government continue running a scaled-down version.

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[52] The proprietor of the telecenters Café Internet Zona 10, Café Internet Villa Hermosa, CyberMannnia Tikal Futura, CyberMannia USAC-AEU, and CyberMannia La Antigua in Guatemala; and CyberMannia Escalón in El Salvador, also has a parallel businesses designing and hosting web pages for private firms and maintains various portals of interest to the Central American community: http://chapines.centramerica.com , www.guanacosenlinea.com, www.catrachosenlinea.com http://www.ticosenlinea.com, http://panama.centramerica.com, http://belize.centramerica.com, http://nicas.centramerica.com, http://directory.centramerica.com.

[53] FAO uses the VERCON system (Virtual Extension, Research and Communication Network), to link research, outreach, and education centers with farmers. It also uses FARMnets – electronic networks managed by farmers. Thelatter system was developed in Mexico and Chile with FAO support and enables farmers to obtain varied information on markets, the climate, social opportunities, etc.

Based on its experience in Valle de Ángeles and Santa Lucía and acknowledging the importance of local content, the ITU in Honduras will also try to develop an inexpensive portal/system for easy management, building, and maintenance of local content.

5.4 Virtual Networks

Much institutional content offers information of public interest, obtained using conventional data collection methods. Those methods generally centralize the sampling, collection, and analysis processes, to control and maintain high standards of quality and reliability of the information.

Often, however, the most fruitful exchange of ideas and information over the Internet are more informal, among family members, friends, and persons with similar interests. E-mail, chat, and telephone service (via IP in this case[54]) allow for interaction among friends and persons with strong personal ties, about specific problems and practices related for example to production, investment opportunities, local market prices, and job vacancies in distance localities in a timely manner for persons with specific profiles and interests. There is no way to reproduce the wealth of idiosyncratic information obtained in this way through conventional methods of information gathering. It is no coincidence that the most successful commercial portals are precisely those that sponsor on-line interaction - via chat or virtual bulletin boards - and the formation of virtual communities.

Collaboration and interaction over the Internet between persons with similar interests are key in learning to use information technologies ([Merkel and Peterson Bishop 2000, p. 1]). And a very important way and first step in fostering the formation of virtual networks (see [Slowinski 2000], page. 44) is an initial face to face encounter. This is why programs such as Canada's CAP (section 4.3), Costarricense.com (section 4.2), and the ITU rural telecenters in Honduras (section 3.8), hold frequent events in which local agents of change ("Champions") meet and exchange views and experiences.

Virtual networks (national or regional) to support telecenters, such as the Community Technology Center's Network (CTCNet) in the U.S., have great potential to support local initiatives and experiences in Latin America and the Caribbean, both for the development of content and the training of telecenter personnel and leaders.[55] In the U.S. these efforts have received strong support from both the philanthropic sector and the State [Lowenberg, 2000]. Some efforts in the region have begun to play such a role; e.g. the Telelac project, http://www.tele-centros.org, sponsored by CIID, and the FUNREDES Mística project [Pimienta 2000].

The Internet is also beginning to enable the empowerment of communities and civil society organizations. The most famous example of social advocacy over the Internet is the effort of Jody Williams and the International Campaign to Ban Landmines (http://www.icbl.org/), recipients of the Nobel Peace Prize who, more importantly, saw the signature and ratification of the Mine Ban Treaty by 139 countries (as of the end of 2000).[56] Some communities in the U.S. are using the

[54] According to the ITU [2000 (b)] telephony over the Internet currently represents 5.5% of total telephone traffic, but this figure could rise to 40% of international traffic by 2004.

[55] The CTCNet web page offers not only a description of services for partner centers, but also an instruction manual for establishing Community Centers [CTCNet 1996].

[56] "Jody Williams won the Nobel Peace Prize in 1997 for her contribution to the international ban on landmines. She achieved that ban not only without much government help, but in the face of opposition from all the major powers. And what did she say was her secret weapon for organizing 1,000 different human rights and arms control groups on six continents? 'E-mail'." [Friedman 2000, page 14].

Internet as a virtual instrument for announcing and identifying resources that can be used to solve problems (see the case of Prairie Net described in [Contractor and Peterson 2000] and [Merkel and Peterson 2000]. Finquelievich, *et al* [2000] have examined how NGOs are beginning to use electronic community networks to interact with society and the State in Argentina and Uruguay.

Academicians and institutions with easy access to new communications media are behind the majority of regional efforts at community building over the Internet, but there is some evidence of virtual activism at the grassroots level. Delgadillo [2000] reports how the livelihood of a group women mussel pickers in Santa Rosa, Esmeraldas, Ecuador, was being threatened by a chieftain who had illegally purchased the mangroves where the women harvested mussels, in order to set up shrimp farms. With assistance from a local NGO, a telecenter was established in Esmeraldas and the women were trained on how to run a campaign to call the attention of international environmental groups. This bypassed and effectively challenged the local media that operated under the control of the mayor and the powerful shrimp farming interests. Eventually Greenpeace joined local efforts to ensure compliance with national legislation and forced the reversal of the mangrove sale.[57]

[57] The power of virtual activism is also being used internationally with increasing effectiveness. Jean-Francois Rischard, Vice President of the World Bank for Europe, has proposed the establishment of Global Issues Networks to address the enormous environmental problems that are taking shape in the new millennium (see Ignatius [2001, page B7]). These networks would involve persons from many institutions, operating in an informal, flexible manner using procedures and exchanges – mostly virtual through the Internet. To illustrate, Mr. Rischard highlights the recent success of the G-7 in fighting the use of certain countries as money-laundering centers. All that the Group had to do was to publish a list of those countries on line and threaten possible exclusion from the international financial transfers system. Within six months, several countries that played a prominent role in money laundering had amended their laws to comply with the requirements of the international community.

VI. Salient Fatures of Central America

6.1 Telecommunications and the Internet

The countries of the Central American subregion contain 7% of the population of Latin America and the Caribbean but only 1% of the domains [ISC 2000], and their presence in the new economy is almost imperceptible. The only countries in the subregion in which the number of Internet users exceeds 1% of the population are Belize, with 4.3%, Costa Rica 3.9%, and Panama, 1.9%. (Table 1). The telecommunications infrastructure is very poorly developed: in Central America only one third of the households have telephones compared with 95% in the United States and 40% in South America.

6.2 Socioeconomic Status

Costa Rica is the last of the 45 countries classed by the UNDP as at a high level of human development (Table 13). The other Central American countries are placed at the intermediate level. The illiteracy rates are dreadful: 33% (males and females combined) in El Salvador, 29.3% in Honduras, 34.4% in Guatemala, 36.6% in Nicaragua, and 25% in Belize, and the illiteracy is concentrated mainly in the rural sector. The illiteracy gender gap is wide in El Salvador: 26% men and 20% women.

6.3 The Rural Population

Extending telephone service in an eminently rural subregion (Figure 2) presents an unusual opportunity in terms of the potential impact of a telecommunications development program while simultaneously posing a singular challenge.

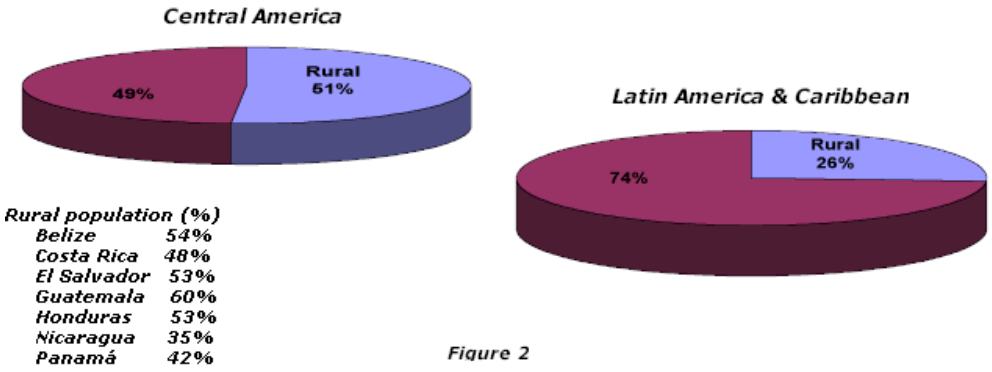

Figure 2

Apart from the lack of services that are typical of remote and thinly populated areas, the mountainous and hilly relief of much of the subregion makes extending the telephone system difficult and expensive to accomplish.

Table 13. Human Development Index and Selected Components for Some Countries of the Americas (1997)

Country	Human Development Index	Per capita Income (PPP)	Life Expectancy at Birth		Illiteracy Rate	
			Males	Females	Males	Females
Costa Rica	0.801	6,650	74.3	78.9	5.0	4.9
El Salvador	0.674	2,880	66.5	72.5	19.9	25.8
Honduras	0.641	2,220	67.5	72.3	28.9	29.8
Guatemala	0.624	4,100	61.4	67.2	33.4	
Nicaragua	0.616	1,997	65.8	70.6	36.7	36.6
Panamá	0.791	7,168	71.8	76.4	8.3	9.6
Belize	0.732	4,300	67.5	72.0	25.0	
Argentina	0.827	10,300	69.7	76.8	3.4	3.5
Brasil	0.739	6,480	63.1	71.0	15.9	16.1
Chile	0.844	12,730	72.3	78.3	4.6	5.1
Jamaica	0.734	3,440	72.9	76.8	18.8	10.4
Mexico	0.786	8,370	69.5	75.5	7.7	12.1
Peru	0.739	4,680	65.9	70.9	6.1	16.3
Canada		22,480	76.1	81.8	1.0	1.0
U.S.A.	0.927	29,010	73.4	80.1	1.0	1.0

Source: UNDP 1999

6.4 Young Population

The Central American population is very young: younger than that of the United States and even that of the Latin American population in general.

The potential value of a young, vital, hopeful population, well-disposed and quick to take to the Internet, is an exceptional opportunity not to be missed. All over the world it is the young who use the Internet the most, and most innovatively.

Table 14. Young Population as % of total: Central America, Latin America, Peru and USA

Country / Region	Population aged:	
	0 to 14	0 to 24
Costa Rica	32.4	51.5
El Salvador	35.6	56.8
Honduras	41.6	62.3
Guatemala	43.6	64.4
Nicaragua	42.7	64.0
Panamá	31.3	49.7
Belize	42.0	n.d.
Central America*	39.5	60.1
Latin America	30.8	49.9
Peru	33.4	53.8
U.S.A.	21.2	35.6

* Excludes Belize for lack of data.

Source: CELADE 2000

6.5 Central Americans Abroad

Many Central Americans live abroad. In 1990 the number of Salvadorans living in neighboring countries (Mexico, the U.S.A., Canada, and other Central American countries) amounted to 10% of the country's population that year (Table 15). This figure does not include the children of expatriate Salvadorans who stay in touch with relatives in their parents' native country. The figures for other countries in the subregion are lower, but still significant. In subsequent years (from 1990 to 2000) the Hispanic population of the United States grew from 22 Millon to 31 million, which represents a growth rate of 3.8% a year.[54] This general growth and available supplementary information — emigration prompted by recent natural disasters — point to an even greater growth of the Central American population resident in the U.S. than in the past.[55]

About as many Spanish speakers resident in the U.S.A. connect to the Internet (1999) as do so from Latin America. The rate of Internet access among Hispanics in the United States, is low, 23%, compared with the rest of the country (41.5%), but rising.[58]

Table 15. Population born in Central America, surveyed by Censuses taken in Canada, United States Mexico and in Central American Countries Other than their Own

(1990 Censuses)

Country	Other Central American Countries	Canada	U.S.A.	Mexico	Total Emigrants	Emigrants as % of home country population in 1990
Costa Rica	10,149	1,305	43,530		54,984	1.8
El Salvador	18,901	28,295	465,433		512,629	10.0
Guatemala	5,791	8,920	225,739	46,005	286,455	3.3
Honduras	23,396	2,245	108,923		134,564	2.8
Nicaragua	10,207	6,460	168,659	2,566	187,892	4.9
Panamá	904	1,170	85,737		87,811	3.7
Sub-regional total	69,348	48,395	1,098,021	48,571	1,264,335	4.5

Sources: Emigration estimates from [CELADE 1999, pag. 45]
Population estimates for 1990 used to calculate last column were obtained from [CELADE 2000]

There are entire villages in Central America that rely predominantly on the remittances from their relatives abroad for their upkeep. According to [Ramos, p. 2], "in 1998 the million and a half Salvadorans who live in the U.S.A.... sent back to their country 1,285 million dollars." Ramos estimates the funds sent by Guatemalans to their country per year at more than $500 million, those sent by Hondurans at $600 million and by Nicaraguans at US$250 million. The Internet not only makes it easy to send remittances, but opens up new markets and commercial and business links for Central America. There are no networks or bonds stronger or more influential for starting a business than those of family, and the potential for strengthening those networks inexpensively through the Internet is extraordinary.

[58] The data cited are from the US Commerce Department [2000]. Clayton Powell III [2000 b], however, reports higher Internet access rates among US hispanics (50%).

6.6 Diversity in Regimes for Telecommunications Regulation and Development

Until recently the region's telecommunications enterprises were government-owned and operated as monopolies in a captive market. These monopolies exercised considerable control over telephone rates, and extracted substantial rents, especially from the long distance telephone market. Any expansion of fixed telecommunication networks into areas of low-density and low-profitability were commonly financed by employing the relatively high earnings obtained from their long-distance business. To make the telecommunications services more efficient and enable their modernization and expansion, and at the same time generate fiscal resources from the sale of the monopoly enterprises, most countries in the region have privatized or are now privatizing their telecommunications sector. Privatization has generally also been accompanied by an opening of telecommunications markets to competition from new operators, generally after an initial period of exclusive market rights for the purchaser of the State monopoly, and under some form of government supervision and regulation.

The countries of Central America have participated in this process in one way or another, but have adopted different privatization and regulation formulas and are today operating under fairly diverse regimes. Costa Rica retains its government monopoly, though the society continues to deliberate on possible privatization options. El Salvador and Guatemala have each set up a regulating entity and have opted for a practically totally open market in which any enterprise can offer telecommunications products and services. Panama has privatized its operating enterprise, but has granted the buyer exclusive rights until 2003, until which year other enterprises are not allowed to compete. Nicaragua and Honduras are in process of privatizing their telecommunications entities and will probably also grant an initial period of exclusivity.

The development and globalization of modern telecommunications have increased competition on the international telephone market, which is making local control of rates increasingly difficult. In this new setting the traditional system of cross-subsidies used by operating enterprises to extend the telephone system to rural areas is no longer workable. This is true even in Costa Rica, where the service is still a state monopoly. In this new context the preferred way to continue extending telephone service into areas of less development and low profitability in the modern state is to:

i) set requirements for expansion of the fixed telephone network as part of the contract of sale, and

ii) establish lowest-subsidy schemes (upon expiration of the period of exclusive rights, if any) by inviting enterprises to compete for the service of a rural area, which enterprises offer to provide in exchange for a stated subsidy. The enterprise that wins is the one that meets the requirements for the service and requests the lowest subsidy.

The countries that have developed fairly effective lowest-subsidy schemes include, notably, Colombia (see [Ministerio de Comunicaciones 1999]), Chile and Peru (section 4.3). The resources for this subsidy are provided from diverse sources, for example, the proceeds from the sale of and taxes on the telephone service. In Central America, Guatemala and El Salvador have set up funds of this type, but in practice the resources available for the development of rural telephone service are meager.

In the case of El Salvador, the country has earmarked US$10 million from the sale of the State monopoly to finance (in the form of a long term interest free loan) the establishment of 100 *Infocentros* throughout the country, 60 of these in rural areas. The undertaking has been entrusted to a private nonprofit association specifically created for this purpose. The Asociación Infocentros is

run by a Board headed by the President of the Government's Multisector Investment Bank. The Asociación has decided to set up its centers following a franchising scheme, and has contracted the services of the *Red Científica Peruana* to help set up the program. The first governmental appropriation to fund the *Infocentros* was released at the beginning of 2000 and the first 5 telecenters were open in October. As of May 2001, these first set of telecenters are being run directly by the *Asociación Infocentros*.

VII. Investment Opportunities and Design Recommendations

7.1 Opportunities

Projects and components aimed at developing the use of information and communications technologies (ICTs) have begun to play a more prominent role in IADB operations, and several projects already propose the development of telecenters. Below is a description of twelve model interventions recommended for Bank action, classified according to the type of instrument applicable: financial (loans) and nonfinancial (technical cooperation, studies, bid calls). There are concrete examples in some cases, while others simply illustrate potential Bank actions. The following opportunities were identified:

	Financial instruments—loan operations	**Example**
1	Community investment funds	*HO-144*
2	Agriculture-agribusiness development	*ES-119*
3	Comprehensive ICT development	*JA-116*
4	Expansion of telecommunications infrastructure	
5	Education	
6	Modernization of the State	
7	Decentralization and municipal development	
Non-financial instruments		
8	MIF: small and medium-sized enterprise development	
9	MIF: telecenters and microfinancing	
10	Strategic partnerships	*IADB Youth Program*
11	Regional technical cooperation in support of virtual networks	*TC-990519-RG*
12	Studies and events	

All of the proposals identified are in principle applicable in Central America. The first four are particularly suited to the sub-region.

Financial Instruments: Loan Operations

Community Investment Funds (CIFs)

The basic instrument is a non-reimbursable contribution by the State to the financing of the investment cost of small community projects. In general, the aim of this kind of intervention is the financing of small, high-impact initiatives that are easily replicable. Suitable institutional procedures are established to streamline the identification, preparation, and implementation of the investments and to involve the community in deciding which projects to execute.

There are two variants of CIFs: productive development funds and social investment funds (SIFs). The former finance investments that generate wealth or enhance the income generating capacity of communities; the latter instead focus on helping communities meet their *basic needs* and financing is concentrated on social sector investments (e.g. education and health). Frequently, SIFs have government decentralization as an additional complementary objective. This commonly involves the pre-allocation of investment resources on the basis of spatial and social policy criteria. In contrast, profitability is the main criteria for productive development funds; they do not allocate resources to municipalities or communities in advance, but rather distribute funds based on the demand of communities and organized groups and the existence of profitable investment opportunities. Within the Bank, the Environment and Natural Resources Management

Divisions support productive development funds, while the Social Development Divisions deal with SIFs.

Both instruments are merit-based. Typically, a menu of options is offered, but only projects that meet basic technical criteria are financed, depending upon the initiative and demand from the target communities. In both cases, a counterpart contribution is required. That contribution is smaller (for example, 5-10%) for public projects, such as a SIF-funded school or a road financed by a productive development fund. Projects that benefit smaller groups and are financed through productive development funds require a larger contribution from the beneficiaries, for example 30-40% for an assembly place for a cooperative.

Both instruments use procedures similar to those used by Canada's Community Access Program (CAP) to promote telecenters (section 4.3). Some of CAP's operating practices could be particularly useful in furthering self-sustainability if applied to the promotion of telecenter initiatives:

i) **Requests by a consortium** of institutions and civil groups, to enhance demand and prevent different proposals from one locality from competing against one another (although always with one institution at the helm to assume the management commitments);

ii) **Technical assistance while proposals are being prepared** by the communities;

iii) **Opportunity for a community to correct and resubmit a proposal** that was previously rejected; and

iv) **Pooling of initiatives** from several communities.

Productive Development

The Program for the Revitalization of the Rural Economy (HO-0144) illustrates how this type of instrument can be used to finance telecenters.

The main component – productive investments – accounts for 80% of the total project cost (US$33 million). The slate of initiatives for potential financing includes investments in rural business centers, i.e. physical facilities with basic services including telephone and Internet access. There will also be periodic visits by trainers and instructors, to present and discuss topics of interest to the community [IADB 2000 (b), page 14]. Project execution was to begin in early 2001. There will be one or two calls for community investment proposals per year. Each municipality may only submit one proposal per round. Although the specific operating procedures have yet to be defined, the contribution required to establish a consortium of NGOs in a community, for example, is likely to be mid-way between the amount required for public projects and those with targeted benefits (around 15-20%).

Given the lack of infrastructure in rural Honduras, proposals from multiple localities will probably have to be consolidated to connect the centers to the Internet. In addition, close coordination and technical consultation will be needed between the executing agency, the National Program for Rural Sustainable Development (PRONADERS) of the Secretariat of Agriculture and Livestock (SAG), and the Honduran Telecommunications Company (HONDUTEL), the National Telecommunications Commission (CONATEL), and the National Power Company (ENEE).

Social Investment Funds (SIFs)

The Social Investment Funds (SIFs) operating in most countries in Latin America and the Caribbean could contribute very quickly to disseminating telecenters in the region, particularly in areas with telecommunications infrastructure. To date, they have focused on projects by local governments, ideally with broad citizen participation, in social sectors including health posts, schools, drinking water, sewerage, and small roads. Expanding SIF financing to cover the installation of telecenters is consistent with the social development approach based on community participation to finance small projects that are easy to replicate.

Agricultural Development

Agricultural development potential in many countries - Central American countries in particular - lies in agricultural export development, primarily of high-value nontraditional products (fruits and vegetables, flowers, and agroindustrial products). Agricultural revitalization projects in the region typically include components to: improve irrigated farming, pest management, and strengthen phytosanitary control systems to ensure food safety; strengthen campesino organizations and marketing systems; enhance the competitveness of contract farming schemes; and improve research and agricultural extension services.

A modern agricultural information system to support each of these elements must contain the following elements:

i) An information system with a web portal that combines formal data collection techniques with close interaction between government extension workers and the producing community, to identify information requirements as well as to feed local information into the system.

ii) Internet access for the extension workers and the campesino community.

In many countries, the latter may require the establishment of shared Internet access points to serve farming communities, i.e. rural telecenters.

The Retooling Agro-Enterprise project in El Salvador (ES-0119) currently being prepared exemplifies this type of project. Total investment of US$25 million will finance four components: i) an information system to support the agricultural sector; ii) strategic partnerships to strengthen national research capacity on and the generation and transfer of agricultural technology; iii) phytosanitary protection and food safety; and iv) management of irrigation systems and crop diversification.

The project's information component proposes improving procedures for collecting, producing, and disseminating data; Internet connectivity in the Ministry of Agriculture and Livestock (MAG) and the central and extension offices of the National Center for Agricultural and Forestry Technology (CENTA); the establishment of approximately 10 small rural telecenters following the community investment fund prototype mechanism (section 4.3), together with an important supplemental training program for MAG personnel, farmers, and rural residents who use the system; and control, feedback, and improvement of the system. The subsidies subprogram to establish rural telecenters sponsored by NGOs and campesino organizations is small, requiring only US$ 80,000, mainly because El Salvador already has a national program for establishing 60 rural infocenters.

Telecenters as Part of an ICT Development Strategy

Jamaica's Ministry of Industry, Commerce, and Technology (MICT) has identified the integration of ICTs into the national economy as the most effective way to increase productivity, employment (particularly among young people), equity, and economic growth. The ministry, in collaboration with other government agencies and with support from the U.S. federal government and Jamaican residents abroad,[59] has designed and begun to implement a five-year national strategic plan on information technology [MICT 2000]. The plan is based on the premise that development of ICTs cannot be exclusively the work of the private sector, given its fragmented nature, and the urgent need to open a space for Jamaica in a highly competitive environment. The plan's overall objectives are to redirect the nation so as to ground it in **knowledge** and facilitate the development of local information technology (IT) companies.

The plan proposes a series of initiatives for immediate government action (Phase I - 12 months) including the: i) establishment of an Information Technology Authority (ITA); ii) allocation of 2-4% of the national budget to promote the development of ICT industries and finance the plan's proposals; iii) continuous review of the laws and norms regulating telecommunications and information technology, to foster greater and growing competition in the sector; iv) forging of ties between the ITA and other Jamaican ministries, particularly the Ministry of Education, to help prepare strategic plans, and establish the post of Principal Information Officer within each ministry; v) installation of computer laboratories with Internet access in the country's primary and secondary schools, reaching 30% of schools in Phase I; vi) installation of computers in posts accessible to the public (150 in each of the country's 14 parishes in Phase I); and vii) inclusion of ICTs in the State Modernization Plan and promotion of the new technologies among the public and national leaders to encourage them to take the leap into cyberspace.

The Information and Communications Technology Project in Jamaica (JA-0116) illustrates how the Bank has begun to support telecenter initiatives within a broader national strategic framework. The preliminary cost of the project is estimated at US$15 million and has five components:

- Support for **E-government** by helping to establish a government portal that citizens can use to access public agencies and services. The portal will increasingly channel State procurements and agency transactions online. To start, the following agency services will be placed on-line: the Jamaica Intellectual Property Office, the investment promotion company JAMPRO, vehicle registration, the issuance of birth and death certificates, and Office of the Registrar of Companies.

- Review of the **legal and regulatory framework for e-commerce** (in areas such as privacy, protecting intellectual property, and digital signatures) and support for reforms to promote competition and private-sector participation in service delivery.

- **Developing human capital**, promoting research and development in ICT companies and training professionals and through distance education services in collaboration with the University of the West Indies. The effectiveness of installing a voucher system enabling students to cover part of the cost of their ICT education will be examined during project preparation. It also provides for the establishment of special programs to support training

[59] The institutions involved in preparing the plan include, most notably, the Embassy of Jamaica in the U.S., the Information Technology Advisory Council of Jamaica, the Jamaican investment agency (JAMPRO), and the Office of Intergovernmental Affairs of the U.S. General Services Administration.

for the disabled and to forge ties between Jamaican training centers and centers abroad, primarily in the U.S. and Canada.

- Community outreach by establishing self-sustaining community **telecenters** connected to the Internet. Preliminary plans call for the financing of equipment and software, through small partial grants to community organizations and small businesses, to facilitate the establishment of these centers. The program will be run by an NGO or private firm selected through international competitive tender procedures. The grant awarding process is expected to follow procedures similar to those used by Canada's Community Access Program.

- Support for the expansion of ICT companies in **Free Trade Zones** in Jamaica.

The project is currently in the initial preparation phase (Profile I was approved in January 2000). Talks with the government on the project began in May 2000, and the Board of the Bank is scheduled to approve the project in October 2001.

Telecommunications Infrastructure Development

Wireless telecommunications technologies have progressed sufficiently to enable the expansion of telecommunications infrastructure for data and voice transmission at a relatively low cost. These technologies are subject to major economies of scale and project formulation today would require a broad vision covering a wide range of topics including connectivity, content, training and networking for community development. This type of intervention would be particularly suited to countries like Guatemala, Panama, and Honduras, where there is limited coverage of the telecommunications infrastructure in rural areas. Bank support could be channeled through the Telecommunications Development Fund mechanism (described in section 4.3).

Education

Telecenters are a good supplement to formal education programs that have a long-term development perspective. The IADB could support initiatives to modernize formal education that include:

i) Updating school equipment and connecting schools to the Internet;

ii) Developing educational content and curricula that make effective use of ICTs;

iii) Technological training of teachers and providing teachers with computers and Internet connectivity that they can use at home to improve their own proficiency; and

iv) School telecenters in communities, at their request.

Modernization of the State

The Bank could help finance efforts to install and implement (sustainable) portals and systems to deliver public services digitally.

- **Putting services from various government agencies online**, such as tax returns [REUNA 2000], processing of documents (identity cards, drivers licenses, etc.), information about the location of schools and school activities, health services, and job markets (see the description of Chile's efforts in [Orrego 2000] and in [*Comité Interministerial de Modernización de la Gestión Pública*]. The portals of the governments of Chile [State of Chile], Canada [Government of Canada] and the United States [US Government] illustrate the range of services available online in those countries;

- **Developing model portals** that enable small rural communities to easily design and host their own sites with information of local interest; and

- Promoting e-commerce among small and medium-sized enterprises and making **State procurements** more transparent, by establishing Internet procurement systems for the goods and services needed by the public sector (see Mexico's COMPRANET on the page maintained by SECODAM and described in English by [TEBELA] and in Spanish by [Schleske 2000]; ComprasNet of Brazil in [Ministry of Planning, Budget, and Management], described in [Lemos Pinto 2000]; and [ComprasChile]).

Decentralization and Municipal Development

The Bank could support government decentralization efforts in the countries by helping to:

- Make government services at different levels (national, provincial, municipal) available to the public over the Internet;

- Train personnel in the municipalities to use information and communications technologies for their administrative tasks and facilitate access to resources and services from other levels of government (national - regional); enhance dialogue between local governments and the community; and serve the population by encouraging the development of sites with community-interest services and content; and

- Establish telecenters in partnership with private enterprise, universities, schools, or NGOs.

Nonfinancial Instruments

MIF: Development of small and medium-sized enterprises (SMEs)

The Multilateral Investment Fund (MIF) could lend support to the development of e-commerce, information systems, and technical services by small and medium-sized enterprises and groups of craftsworkers and other small producers, by financing innovative experimental projects to develop content that may also require complementary training on organizational and production elements.

MIF: Telecenters and Microfinancing

The MIF has provided considerable support to microcredit institutions throughout Latin America and the Caribbean. In general, microcredit loans are small and of short duration – rarely over one

year. This kind of financing is not suitable to establish an entire telecenter (except for the very smallest ones with 1 or 2 computers), but can nevertheless help existing telecenter operators expand their facilities. Since the main capital cost in a telecenter is the computer – an item that is easy to seize – computers can serve as collateral to reduce the risk of the transaction. Accordingly, the MIF's regular institutional and financial support will make it possible to expand financing to develop commercial telecenters in the region.

The MIF could also help establish individual telecenters or telecenter chains operated by microfinancing enterprises as an added service to their customers. It is far easier to manage a telecenter than a credit program. Clients of a microfinancing enterprise would most probably appreciate having a place to conduct their business electronically together with their "bank." This added service would expand the productive capacity of the microfinancing institutions' clientele by increasing their access to technical advisory services and broadening their markets. If, in parallel to helping finance telecenter establishment, the MIF program also were to provide financing to put some of the microfinance institution's administrative procedures online (for example, downloading forms and checking balances), the program would also help to lower transaction costs associated with loan processing.

The establishment of such a network of telecenters could be of interest to institutions like, for example, The National Federation of Savings and Loans of Guatemala (FENACOAC), the Association of Rural Savings and Loan Institutions, Inc. (AIRAC) in the Dominican Republic, or Financiera Calpiá in El Salvador.

Regional Technical Cooperation in Support of Virtual Networks

The Bank should promote the formation of virtual networks to assist and support telecenter initiatives and to help expand the use of ICTs for social change by traditionally marginalized groups. Specifically, the **Bank's Pilot Project for the Diffusion of Information Technologies in Social Programs** (TC-990519-RG) could support proposals by institutions that already have some experience, such as the Telelac project, FUNREDES, and indigenous and women's associations on the web, on activities such as:

- Development in stages (at a low cost and bearing in mind the cost-benefit ratio) of a regional portal that facilitates the preparation of content and local content by small communities in Latin America and the Caribbean, in a low-cost, friendly manner;
- Identification and dissemination of sources of financing for local telecenter initiatives;
- Preparing studies that show best practices and posting them on line;
- Training on the use of operating systems for free servers (LINUX, APACHE);
- Ongoing dialogue on rural connectivity options;
- Virtual conferences on specific topics of interest to telecenter administrators;

- Coordination with programs that promote telecenters and connectivity in Hispanic communities in North America, to foster greater integration and economic and social cooperation between peoples in the region and emigrants; and

- Regional training programs lasting one week, for example, to train microentrepreneurs linked to a telecenter (or a group of centers) so they can partner with other enterprises (providers and intermediaries) and market their products using e-mail and the web.

Strategic Partnerships

The Bank must **continue to use its constituent strengthen and ability to forge strategic partnerships** among government, private enterprise, and NGO initiatives of proven effectiveness, as it has begun to do with the Bank's youth program in Uruguay and Colombia together with the telecenters of the *Comité para la Democratización de la Informática* (CDI) and funding from the StarMedia Foundation and UNESCO (see section 3.6).

This is new terrain in which the Bank must move cautiously so as not to violate its own operational policies by favoring individual companies.[60] Nevertheless, the Bank should otherwise encourage an increased involvement of private philanthropy and of other organizations in support of the region's socio-economic development.

Studies and Events

It is important to conduct a systematic program of studies, regional dialogue, and dissemination of the findings on key topics, for example:

> The studies by Melo and Corbin [1999] on telecommunications in Central America and the ensuing Central American Meeting on Telecommunication Sector Reforms (November 9 and 10, 2000; sponsored by RE/FI2);
>
> The Central American meeting (sponsored by RE/SO2) on telecenters scheduled for June 2001.

Other activities could address various topics, for example:

- Manuals and procedures for self-sufficient management and administration of telecenters;

- Study of e-commerce opportunities for small and micro-producers and rural microenterprises;

- Distance learning opportunities for low income and disadvantaged groups;

[60] The Bank's operational policy ([IDB 1999], eligibility criteria, subparagraph c) on information technologies and development states:

In the case of partnerships with private enterprise and contributions from private companies, the Bank must adhere to the traditional core rules and procedures for relations with these enterprises and entities. In short, i) the Bank does not endorse the participating private company or its products; ii) private donor companies or entities will not gain any advantage over other companies/enterprises (not participating) in the provision of goods and services in any other country financed by loans and other resources administered by the Bank; and iii) procurements will strictly comply with Bank procurement policies.

- Documentation of experiences that combine formal education for technological development and school telecenters;
- Documentation of examples of virtual activism that have been successful in bringing about social and economic change;
- Documentation of best practices in community broadcasting;
- Analysis of systems with essential content for rural telecenter projects;
- Documentation of experiences that combine university telecenters with rural telecommunications outreach; and
- Use of packet-radios to expand the services, scope, and self-sustainability of rural telecenters.

7.2 Design recommendations

Role of Telecenters

Recommendation No. 1. Telecenters can help bridge the digital divide, but **they are instruments of limited reach.** For a telecenter program to be effective it needs to be **part of a comprehensive economic and rural development strategy**.

A telecenter development program will, if properly conceived, increase **access** to information and communications technologies. The concept of access needs to be comprehensive and include critical elements such as connectivity, training, and the development of content and virtual networks. Given the demands of the new economy with its emphasis on knowledge networks, and the danger of an expanding gap between the rich and poor if these networks are not broad-based, investments in key complementary sectors, such as education, health, transport and energy, will also be necessary; and institutional and economic reforms that expand the work opportunities and socio-economic participation of sectors of the Latin American and Caribbean population traditionally marginalized (agriculture, microenterprise, and small business) will also need to be instituted.

Connectivity

Recommendation No. 2. Rapid developments in wireless technology have made it possible to overcome physical hurdles (distance, topography), at an affordable cost, that for long have limited the development of telecommunications infrastructure in rural areas of Latin America and the Caribbean. The benefits to rural populations of infrastructure investments should be maximized by providing Internet service and not just telephony. **Shared access to these services through telecenters can increase the impact of investments in rural areas.** In remote and sparsely populated areas market incentives will often provide insufficient stimulus to private investment, and **government subsidies will be required.**

Training

Recommendation No. 3. ICT training interventions should be geared primarily towards **young people**, since they adapt more quickly and easily and are most skilled in using new technologies. Since young people are also a large group in the region, with the longest productive horizon ahead of them, there is a high return on investments aimed at improving their productive capacity. The starting point must be the strengthening of the **formal education system**, so that it incorporates the effective use of the new technologies. Teacher training is often a critical factor in reaching the young. **Telecenters can provide an important supplement to formal education reform,** providing support to students and teachers outside of the classroom, and facilitating continuing and distance education and increasing Internet access for teachers, parents, recent graduates and the community at large.

Recommendation No. 4. The lack of knowledge about use of the Internet and computers is not a serious obstacle for young or well-educated adult users. For telecenters serving rural areas or urban residents with limited education, a training program for novice adult users may be essential. In general, communities are quite familiar with their shortcomings and are able to articulate their needs.

Content and Virtual Networks

The Internet makes it possible to provide information and services of practical use to the population at a very low cost, and telecenters are a way of increasing outreach. Content is needed to help the target group expand its selling opportunities, compile information on prices in different markets, seek technical consultations and exchange experiences online, obtain information on productive processes, obtain work, access telemedicine and distance education, make its voice heard, and promote more active civic participation by groups marginalized from society until now (see, for example, [COPPIP]).

Recommendation No. 5. Priority must be given to launching portals offering **public services**, aimed at meeting the economic and social needs of the low-income population, including educational sites that use simple language and amplify job and self-employment opportunities.

Recommendation No. 6. Public investment does not necessarily imply public administration. The combination of State investment with the development by the private sector of public information and virtual support systems is an effective way to promote a modern, efficient private ICT sector, especially if the public sponsored contracts are awarded under a merit-based competitive system. One example of this modus operandi is Chile's Information System for Government Procurements and Contracting, which was promoted by the Secretariat of the Presidency in 1998, financed by development and innovation funds from the Production Development Corporation (CORFO), and executed by a three-company consortium (see ComprasChile).

Recommendation No. 7. It is not always essential for there to be a link between a telecenter and content development. When the user population has a solid educational level, the usefulness of State-sponsored portals to support telecenter development programs is debatable. One advantage of the Internet is precisely that it eliminates physical space as a barrier, and private or State institutions can create networks or portals of great practical use independent of the development of telecenters. For example, to disseminate technical or market information for small and medium-sized enterprises (SMEs) and the agricultural sector, it is more important to have a **virtual center** (see the Mexican Business Information System – SIEM [SECOFI]) and for **virtual networks** to

be established among companies, cooperatives, and other institutions that already have computers or are in a position to acquire them (InfoAgro in Costa Rica and the CONCYT project in Guatemala).

Recommendation No. 8. It is the community that should take the initiative and be responsible for maintaining community portals and information systems. The State and the philanthropic sector can help expand the presence in the web of poor users, small towns and businesses, by making the tasks involved more user-friendly and less expensive. The systems developed must be simple, and the requirements for keeping these portals and information systems up-to-date must be consistent with the organizational and financial capacity of the users. Otherwise, there is the risk of spending a lot of money on unsustainable and useless or outdated web sites.

Recommendation No. 9. Government policies must strengthen the **legal and institutional framework** to foster the development (primarily by private enterprise) of portals and Internet solutions that facilitate e-commerce, particularly by small and micro-producers and vendors. The lack of secure, on-line payment mechanisms accessible to all types of producers is one obstacle that needs to be urgently overcome.

Recommendation No. 10. It is important for the State and society to welcome and encourage **virtual activism**, as a means of empowering low-income populations to address their own problems constructively and effectively. This form of activism will develop rapidly as more citizens -- until now bypassed by technology -- gain access to and recognize the power of the Internet to voice their social claims and support their own organizations and initiatives. The main contribution of telecenters might well be an increase in communications and options for interaction and social coordination. Support programs can promote virtual interaction and enhanced productivity, by sponsoring face-to-face meetings between administrators and users with similar problems and interests. They can also finance the development of low-cost tools (software) in the **public domain** to facilitate **virtual** interaction and joint organizational work over the Internet.

Types of Telecenters

Recommendation No. 11. Commercial telecenters, as developed by the private sector in Peru (*cabinas públicas*) and on a smaller scale in other countries (cyber cafés), are excellent vehicles for increasing Internet access. Promoting the spontaneous development of this type of market-based telecenter is a healthy strategy, but requires concerted effort on the part of the government; and the speed with which they emerge depends on specific conditions that are not always in place in the countries. Bearing in mind the example of Peru, the following is required:

- An extensive market of numerous low-income families with a solid educational level, concentrated in a safe area (low incidence of theft) with transportation facilities, for whom a computer and Internet connection is too expensive (high individual access costs relative to income).

- Professional, trained personnel and a large, entrepreneurial informal sector.

- An open market and strong competition at several levels, particularly among Internet service providers.

- A pricing policy that encourages charging for delivery of public services.

Recommendation No. 12. There are countless successful experiences with telephone franchising, but experience to date with commercial franchising of telecenters is very limited. Financing and developing a sustainable rural or urban **commercial telecenter franchise** model is risky and is a proper task of the private sector; not of public or quasi-public entities run (directly or indirectly) by the State.

Recommendation No. 13. Access to computers and the Internet can be a very useful tool in efforts to decentralize and strengthen local governments [Verdisco and Gargiulo 2001]. Municipalities can also promote the development of **municipal telecenters**, to help further local development and enhance civic participation. The key to success lies in keeping the operations of the telecenter independent from those of the mayor's office and reducing the potential for political interference by supporting the implementation of telecenters with a sustainable management model. If the municipality has resources, a commitment from local authorities to maintain the center may be sufficient. However in many if not most cases, it is preferable for the private sector to manage the telecenter, to prevent the adoption of pricing practices and operational norms that are detrimental to sound administration and sustainability. This could be achieved, for example, if a private company establishes and directly operates the telecenter, while the municipality supports the initiative by providing the locale free of charge or financing training scholarships or use-vouchers for children or other groups it wishes to favor.

Recommendation No. 14. Other types of telecenters can also help to bridge the digital divide.

- **University telecenters**, given their link to research activities and centers of excellence, can offer supplemental service, social outreach and develop connectivity, training, content, and virtual networks. If they charge for the services provided and operate in a sustainable manner, University telecenters will also serve as an example to be emulated by other public and private institutions.

- Many countries could establish **school** telecenters by outfitting classrooms as student laboratories and opening their doors to the public at the end of the school day. Many more school youths could benefit from a school telecenter than from a university facility; and the closer parent-teacher relationship in schools would enhance community involvement. Having the school system and the community share telecenter costs and equipment would bolster sustainability. Following the example of peruvian university telecenters, school telecenters could charge for services rendered to enhance sustainability. Laws or institutional regulations may have to be amended to allow schools to collect fees and use the revenue to operate and maintain the center. Since schools are more numerous and more widely spread than universities, school telecenters could benefit a larger number of low-income persons.

- There is a broad range of **NGO-sponsored telecenters**. Many have had positive experiences, but they are difficult to characterize. The most successful initiatives generally share the following traits: i) their sponsors are quite open and willing to discuss their financial situation, as well as their achievements, difficulties, and shortcomings; ii) they promote modern, inexpensive information and communications technology consistent with the payment ability of and potential benefit to the target clientele; iii) their mandate is documented and clearly identifies the direction and current status of the sustainability of operations; iv) all clients, no matter how poor, are required to pay for services received, even if such payment is made in kind; and v) they maintain a decentralized administrative structure attuned to their patrons' needs.

- There have been different manifestations of the **multipurpose** telecenter model. From the outset and under ITU leadership, their task and main contribution has been experimentation with and development of service and operating alternatives to try to overcome the challenges posed by rural environments.

Recommendation No. 15. More important than type, to be successful in bringing about economic and social development, telecenter initiatives need to:

- Target a low-income population as (at least part of) its clientele;
- Remain strongly committed to self-sustainability and adopt a business model that is consistent with that commitment; and
- Be run by someone that is: personally committed to the project, willing to contribute his or her own capital and time, backed by the community in which the center operates, willing to incorporate the community's aims, and knowledgeable of the initiative's technical and financial requirements.[61]

State Support

Recommendation No. 16. It is not reasonable to expect commercial telecenters to expand quickly and spontaneously enough in rural areas or in urban low-income areas, even if these are served by telecommunications infrastructure. The private sector will naturally prioritize the most profitable areas, primarily tourist areas and high-income urban neighborhoods. Even in cities that develop a dense network of commercial telecenters, the poor persons served will be those that have considerable human capital. **To serve the masses of poor people whose formal education is generally quite limited, the State will have to adopt subsidized development interventions.**

Recommendation No. 17. State support should adhere to transparent and sustainable institutional formulas:

- Subsidies for the initial outfitting of telecenters seem adequate, leaving operating and maintenance costs to be provided by telecenter operators.
- If the State decides to offer users free or highly subsidized service, it must recognize that in so doing it may interfere with the development of private initiative – at least in the area surrounding the telecenter. It is also important for the State to be willing and able to bear the implementation costs in a regular, ongoing basis.
- In general, it is preferable to introduce (experiment with) a scholarship or voucher system for impoverished sectors, instead of general subsidization of all users.
- The success of many business franchises in different spheres has been very enticing to the public sector, which is always seeking to make high impact visible interventions. In practice, State efforts (either directly or through quasi-public organizations) to promote telecenter development under **public franchise schemes** tend to under-

[61] The person does not have to be an engineer, but must be willing to learn basic aspects of computing and networks. He/she also does not have to be an accountant, but does need to keep basic accounts of income and expenditures.

mine local ingenuity and the sustainability of the endeavor and therefore **is not recommended**. Instead, other support formulas that give local administrators full latitude and flexibility in decision-making should be used.

- In countries where the State has a monopoly on telecommunications, government concessions may be the only alternative for developing telecenters for the low-income population. Entrusting civil society institutions with the management and operation of the telecenters will enhance the likelihood of success.

- In general, merit-based systems of support appear to be suitable and transparent means of promoting self-sustainability and innovation in telecenter development.

- The two types of merit-based systems considered - **Telecommunications Development Funds and Community Investment Funds -** have yielded good results, and **both are recommended.**

Internet Access and Telecenters in Central America

Recommendation No. 18. Increased Internet access can and should play a vital role in the development of Central America, given the youth of the population and the large number of Central Americans residing abroad and bearing in mind that telecenters are used predominantly for communications – chat and e-mail.

Promoting Telecenters in Urban and Rural Areas with Good Connectivity

Recommendation No. 19. In urban and fringe areas with solid infrastructure, community investment funds, as used in Canada, are a quick, effective way to increase citizens' access to the Internet. In principle, the Social Investment Funds currently operating in most Latin American and Caribbean countries, could play an important role in the very short term in developing community telecenters throughout the region.

Promoting Rural Telecenters

Recommendation No. 20. A program to expand Internet access cannot ignore the traditionally excluded population that resides in rural areas of the region and that make up a quarter of its population (50% in Central America). Furthermore, it is in these areas where poverty is most widespread and deplorable. The main obstacle in many rural areas is the lack of telecommunications infrastructure. To overcome this impediment, special support programs, often requiring State subsidy, will need to be instituted.

Recommendation No. 21. For countries in which privatization is pending (possibly Costa Rica, Nicaragua, Honduras), it is important for the privatization process to:

make provisions for a significant expansion of the national telecommunications infrastructure;

allow for the expansion of rural infrastructure (including voice and data transmission) in sparsely populated areas, for example, by setting up minimum subsidy tender procedures and allowing the participation of specialized wireless operators (e.g. VSAT,

wireless local loop) in service provision; and

foster competition among Internet service providers (ISPs) and, as soon as possible, telecommunications companies, thereby - albeit indirectly, but effectively - encourage the expansion of commercial telecenters.

Recommendation No. 22. The minimum subsidy schemes used by telecommunications regulatory and promotion agencies are well suited to encouraging the investments required to extend service to rural areas and that are subject to significant scale economies. Such funds have been successful in Chile [Subtel], Peru (FITEL, on the OPSITEL web page) and Colombia ([COMPARTEL]), in promoting the expansion of telephony with the capacity to connect to the Internet on a prudent, sustainable foundation. These funds have been used to finance telecenters in Colombia and the same is being proposed for Chile [Espigia 1999] and Perú. The adaptation of these experiences in Central America and other countries in the region deserve consideration, particularly to extend connectivity in rural areas. Bidding formulas must provide for the establishment of telecenters with voice and data transmission capacity, making it possible to surf the web. Bidders should have the latitude to propose the management formulas they deem appropriate. This could include the bidding company directly managing the center, but a preference for management models that use institutions and enterprises in the communities that will be served should be stipulated in tender documents.

Bank Instruments and Development of ICTs

The globalization of markets, the quick and growing pace with which decisions are made and executed, and the changing role of leadership in an environment where implementation of actions is being decentralized and knowledge networks are constantly being reorganized, both inside and outside of companies and associations, offer a context of social and economic change of unprecedented dynamism. Companies the world over are: **decentralizing** their decision-making processes; establishing **alliances** with other companies on short notice and dissolving them just as readily; and, forced by the exigencies of the market and armed by the new ICTs, are developing their capacity for **fast response** to their client requirements. Civil organizations are also making these changes, in part to seize the new opportunities and also to remain effective.

The new environment poses extraordinary challenges for **public sectors**, national as well as international. By tradition or constitution, their administrative and decision-making structures tend to be compartmentalized and dependent on various bodies for approval and control, their modus operandi are determined by fairly rigid, complex multilevel hierarchies. These features are not conducive to decentralization, alliance building or rapid response. And, unlike private firms or non-governmental organizations, public agencies may go on for long even as they become increasingly irrelevant.[62]

The IADB has been at crossroads before. The late 1980s was a critical time when member countries of the region were facing serious economic imbalances, and a different recipe for financial support was needed to introduce and facilitate the execution of structural adjustment programs. The Bank met the challenge by drastically altering the structure of its portfolio, creating new instruments and making sweeping changes in its organizational structure and operating procedures. In part through Bank support, Latin America and the Caribbean was able to get their house in or-

[62] In part it is in recognition of the difficulties just noted, and the importance of the initiative, that some of the countries that have adopted aggressive Internet strategies (e.g. Chile, Colombia, Costa Rica, Uruguay), have created special inter-agency coordination structures and have situated them at the highest level of their executive branch of government.

der, often accepting bitter medicine, and are now in a position to take advantage of the opportunities offered by knowledge networks and to confront the new challenges they also bring forth.

Information and communications technology (ICT) projects and components have a specific profile that separates them from other kinds of interventions.

> First, they **involve many disciplines and sectors**. In the case of telecenters, for example, hardware (infrastructure and connectivity) is no more important than software (training, content, networking); both are important. Section 7.1 describes three lending projects that include telecenter components. One of those (JA-0116) is supported by the Ministry of Science and Technology and, within the Bank, by the Infrastructure and Financial Markets Division. The other two (ES-0119 and HO-0144) are supported by ministries of agriculture and, within the Bank, by the Environment and Natural Resources Management Division. Several other national institutions and Bank divisions may be involved if one considers the other investment opportunities identified (education, modernization of the State, microenterprise, etc.). Because of the multiple sectors concerned, coordination and working in multidisciplinary teams is required, both within the Bank and in the countries (e.g. ministries of telecommunications, education, science and technology, agriculture, and rural development). Furthermore, for ICT projects to have a broad-based impact and improve the lives of low-income populations, project design teams need to incorporate mechanisms of dialogue and consultation with civil society and private firms.[63] Achieving effective coordination through multidisciplinary – multi-sector teams is complex, and determining competencies among institutional entities is no easy task.
>
> Second, ICT operations have **intensive knowledge and technical assistance requirements**, instead of physical and financial capital needs, which traditionally have been most important to the Bank. This shift in emphasis in favor of non-financial instruments makes it necessary for the Bank to join in partnership with technical cooperation organizations and bilateral agencies, private philanthropic entities, and even civil society organizations.
>
> Third, **ICT operations need to be prepared swiftly.** Technology changes from one day to the next and project designs become outdated very quickly.

Recommendation No. 23. The new instruments adopted by the Bank in 2000, innovation loans in particular, should prove helpful in reducing project-processing time. However, if the Bank is to be at the cutting edge, a leader in ICT development throughout the region, more fundamental changes in its instruments and operating procedures are likely to be needed. The changes required would aim to improve the Bank's ability to work effectively with multiple sectors, in partnership with different kinds of public and private institutions and making intensive use of technical assistance inputs, and radically reducing project-processing time. Such changes would enable the IADB to set the standard for public sectors throughout the region, and to make an effective contribution to regional efforts to give **all peoples of the Americas** the opportunity to acquire knowledge, improve their future, and become fully engaged citizens.

[63] "Strengthening alliances between governments, civil society, and the private sector is essential to translating the social vision of the Internet into concrete policies and actions for development." [Gómez and Martínez, 2001], page 9.

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Annex A

Results of *Cabina* User Survey

A-1.a. Socioeconomic Features of Users Surveyed - Page 1 of 3

	All Users			Students			Non-students		
	Total	**Men**	**Women**	**Total**	**Men**	**Women**	**Total**	**Men**	**Women**
Number of observations	1752	978	774	1337	748	589	415	230	185
% of overall total	100%	56%	44%	76%	43%	34%	24%	13%	11%
% of group total	100%	56%	44%	100%	56%	44%	100%	55%	45%
Age									
average (in years)	22.7	23.1	22.1	20.7	21	20.4	28.8	30	27.3
by age grouping (%)									
15-24	78.7	76.8	81.1	91.1	90.4	92	38.8	32.6	46.5
25-40	19.6	20.8	18.1	8.7	9.2	8	54.7	58.3	50.3
41-59	1.5	2.2	0.6	0.2	0.4	0	5.8	8.3	2.7
60+	0.2	0.2	0.1	0	0	0	0.7	0.9	0.5
Total (%)	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**
Marital status (% of observations)									
married	9.4	10.3	8.1	3.4	3.7	2.9	28.7	31.7	24.9
divorced/separated	2.1	1.9	2.3	0.7	0.7	0.8	6.5	6.1	7
single	83.3	82.1	84.9	91.8	91.2	92.7	55.9	52.6	60
living together	2.1	2.1	2.1	1.3	1.3	1.2	4.8	4.8	4.9
na/ia	3.1	3.5	2.6	2.7	3.1	2.4	4.1	4.8	3.2
Total (%)	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**
Género (%)									
masculino	55.8	100	-	55.9	100	-	55.4	100	-
femenino	44.2	-	100	44.1	-	100	44.6	-	100
Número promedio de familiares	4.46	4.47	4.45	4.69	4.67	4.71	3.73	3.82	3.62
Posición (%) **en hogar donde reside**									
Jefe(a)	7.5	10.6	3.5	2.7	3.6	1.5	22.9	33.5	9.7
Cónyugue	2.6	1.1	4.4	1	0.9	1	7.7	1.7	15.1
Hijo(a)	74.4	72.3	77	82.8	81.4	84.6	47.2	42.6	53
Nieto(a)	2	2.1	1.8	2.3	2.3	2.4	1	1.7	0
Padre/Madre	3.1	2.6	3.9	2.2	2.3	2	6.3	3.5	9.7
Hermano(a)	3.3	3.6	3	2.8	2.5	3.1	5.1	7	2.7
Otra relación familiar	2.5	2.7	2.3	2.1	2.1	2	4	4.7	3.2
Amigo/huesped	2.2	2.6	1.8	2.4	2.8	1.9	1.7	1.7	1.6
Empleado(a)	0	0	0	0	0	0	0	0	0
nc / mc	2.3	2.3	2.3	1.7	2	1.5	4.1	3.4	4.8
Total (%)	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**

na/ic Not answered/incorrectly answered

Note: These tabulations exclude transients and children aged 14 and less.

A-1.b. Socioeconomic Features of Users Surveyed - Page 2 of 3

	All Users			Students			Non-students		
	Total	**Men**	**Women**	**Total**	**Men**	**Women**	**Total**	**Men**	**Women**
Number of observations	1752	978	774	1337	748	589	415	230	185
Occupation (%)*									
student	62.5	62.3	62.7	79	78.5	79.6	0	0	0
salaried worker	6.7	6.4	7.1	3.9	4.4	3.2	17.4	14.2	21.5
farmer	0.5	0.3	0.7	0.4	0.4	0.3	1.1	0	2.5
teacher	3.5	2.6	4.7	1.1	0.8	1.5	12.5	9.3	16.5
Public employee	2.5	2.8	2.2	0.5	0.5	0.5	10.1	11.3	8.5
Merchant/business owner	2.9	3.4	2.1	1.5	1.5	1.5	8.1	10.9	4.5
Professional (Doctor, Attorney, Engineer, etc)	7.8	8.8	6.5	2.8	2.5	3.1	26.6	32.8	19
Part time worker	3.7	4.5	2.7	2.7	3.4	1.9	7.4	8.9	5.5
Retired	0.6	0.8	0.3	0.5	0.6	0.3	1.1	1.6	0.5
Unemployed	4.6	3.9	5.4	3.2	3	3.5	9.6	7.3	12.5
Housework	4.1	3.5	4.9	4	3.7	4.3	4.7	2.8	7
Housework employed by others	0.7	0.7	0.6	0.5	0.6	0.3	1.3	0.8	2
Total (%)	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**
Total number of options selected**	2140	1200	940	1693	953	740	447	247	200
Highest level of school achieved (%)									
none	0.2	0.1	0.4	0.1	0.1	0	0.7	0	1.6
primary	0.4	0.5	0.3	0.4	0.5	0.2	0.5	0.4	0.5
secondary	29.7	29.0	30.6	36.1	35.8	36.5	9.2	7	11.9
technical studies	26.7	27.6	25.5	28.2	29	27.2	21.7	23	20
graduate/bachelors	27.5	27.9	27	28.9	29.7	28	22.9	22.2	23.8
professional title	12.5	11.9	12.5	3.8	3.2	4.6	39.0	40.0	37.8
Masters	1.0	1.4	0.5	0	0	0	4.3	6.1	2.2
Ph.D. (*doctorado)*	0.2	0.1	0.4	0.1	0	0.2	0.7	0.4	1.1
na / ic	2.1	1.4	2.8	2.4	1.6	3.4	1.0	0.9	1.1
Total (%)	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**
Mother tongue									
Spanish	98.7	99	98.3	99.2	99.2	99.2	97.1	98.3	95.7
Quechua	0.6	0.5	0.8	0.4	0.5	0.3	1.2	0.4	2.2
Aymara	0.1	0.2	0	0.1	0.1	0	0.2	0.4	0
English	0.3	0.2	0.4	0.1	0	0.3	0.7	0.9	0.5
Other/not specified	0.3	0.1	0.5	0.2	0.1	0.2	0.7	0	1.6
Total (%)	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**
Indicated being Able to Read English (%) ***	39.3	38.6	40.1	39.4	37.6	41.6	39.0	42.0	35.0

* Question allowed more than one answer from each user surveyed.

** The percent is estimated in reference to the total number of options selected. Since more than one alternative per user is allowed, the total may exceed the total number of users that answered the question.

*** Only persons whose mother tongue is Spanish are considered in the calculations

nc / ic Not answered/ Incorrectly answered

n.a. Not applicable

Note: These tabulations exclude transients and children aged 14 and less.

A-1.c. Socioeconomic Features of Users Surveyed - Page 3 of 3

	All Users			Students			Non-students		
	Total	**Men**	**Women**	**Total**	**Men**	**Women**	**Total**	**Men**	**Women**
Number of observations (total in sample)	1752	978	774	1337	748	589	415	230	185
Contributors to family income (%)									
users that did not contribute	54.0	48.2	61.4	64.9	59.4	72	18.8	11.7	27.6
users that contributed some (between 0 & 40%)	30.6	34.7	25.5	27.8	32.8	21.4	40	41.3	38.4
that contributed significantly (between 40% & 80%	7.2	8.4	5.7	2.8	3.4	2.2	21.2	24.8	16.8
that contributed more than 80%	4.1	5.3	2.6	0.7	0.9	0.5	14.9	19.6	9.2
nc / mc	4	3.4	4.9	3.7	3.6	3.9	5.1	2.6	8.1
Total (%)	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**
Monthly family income (%)									
S./ 0 to 500	32.6	30.2	37.2	37.7	35.7	41.9	25.9	22.6	31.6
S./ 501 to 1000	33.3	33.6	32.8	30.4	32	27.2	37.2	35.9	39.5
S./ 1000 to 5000	31.9	34	28	29.7	30.1	28.7	35	39.5	27.2
over S./ 5000	2.1	2.1	2	2.2	2.2	2.2	1.9	2.1	1.8
Total (%)	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**
Number of users considered in clculations*	717	467	250	408	272	136	309	195	114
% of total number of observations	41%	48%	32%	31%	36%	23%	74%	85%	62%

* Number of users considered in family income calculations. Children, transients, users that made no contribution, and persons that answered incorrectly or did not answer, have all been excluded.

nc / mc Did not answer / answered incorrectly

A-2. Cabina Use Patterns of Surveyed Users

	All Users			Students			Non-students		
	Total	**Men**	**Women**	**Total**	**Men**	**Women**	**Total**	**Men**	**Women**
Number of observations	1752	978	774	1337	748	589	415	230	185
No. of *cabinas* frequently used *	2.3	2.5	2.2	2.3	2.3	2.3	2.3	2.4	2.1
Travel distance to the cabina (%) *									
less than 1 km	43.7	44.8	42.1	44.2	45.1	43.1	42.0	44.0	39.3
from 1 to 5 km	35.5	35.6	35.5	34.9	35.4	34.3	37.7	36.5	39.3
from 5 to 10 km	13.3	12.8	13.9	13.4	12.6	14.6	12.4	13.3	11.2
10 or more km.	7.6	6.7	8.5	7.4	7.0	7.9	7.9	6.2	10.1
Total (%)	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**
Has comptuer at home (% that has) *	40.7	42.0	39.0	40.3	40.2	40.6	41.7	47.8	34.1
Is connected to the Internet at home (%) *	5.1	5.6	4.4	4.9	4.7	5.1	5.8	8.7	2.2
Frequency of use									
4 or more days a week	22.6	24.5	20.2	23.3	24.7	21.4	20.5	23.9	16.2
2 or 3 days a week	34.5	37.5	30.6	35.8	38.8	31.9	30.4	33.5	26.5
once a week	23.3	21.2	26.1	23.3	21.0	26.3	23.4	21.7	25.4
1 to 3 times a month	13.4	12.1	15	12.4	11.5	13.6	16.4	13.9	19.5
3 to 4 times a year	1.8	1.3	2.5	1.5	0.9	2.2	2.9	2.6	3.2
less than twice a year	1.5	0.8	2.5	1.3	0.7	2.0	2.4	1.3	3.8
nc/mc	2.9	2.5	3.26	2.5	2.4	2.6	4.1	3	5.44
Total (%)	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**
Time spent in the *cabina* during typical visit									
Less than one hour	9.9	9.4	10.6	7.7	7.0	8.7	17.1	17.4	16.8
1 to 2 hours	67.8	67.8	67.8	71.7	71.1	72.5	55.2	57	53
2 to 4 hours	14.8	15.2	14.2	14.5	15.1	13.8	15.7	15.7	15.7
4 to 6 hours	3	3.4	2.6	2.8	2.9	2.5	3.9	4.8	2.7
6 to 8 hours	0.9	0.7	1.2	0.7	0.7	0.8	1.4	0.9	2.2
more than 8 hours	0.5	0.6	0.4	0.4	0.5	0.2	1	0.9	1.1
nc/mc	3.0	2.9	3.2	2.1	2.7	1.5	5.8	3.4	8.6
Total (%)	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**
How did you learn of the *cabina?*									
Through parents and friends	50.0	48.4	52.0	54.6	53.8	55.7	35.1	30.8	40.4
Passing by	20.6	20.1	21.3	20.3	19.8	20.8	21.8	21.0	22.8
Through work colleagues	4.9	5.5	4.2	2.0	2.4	1.5	14.3	15.4	12.9
Suggestion of public official	3.1	3.5	2.5	2.8	2.7	2.9	3.9	6.1	1.2
Suggestion of NGO	0.4	0.4	0.3	0.2	0.3	0.2	0.8	0.9	0.6
Journal or magazine advertisement	1.0	0.8	1.4	0.8	0.4	1.3	1.8	1.9	1.8
Internet	2.4	2.2	2.6	2.5	2.1	2.9	2.1	2.3	1.8
Radio	3.9	3.4	4.5	4.2	3.4	5.1	2.9	3.3	2.3
Television	1.1	0.8	1.5	0.9	0.7	1.1	1.8	0.9	2.9
Public posters or bulletins	4.7	5.4	3.8	4.2	5.0	3.3	6.0	6.5	5.3
User was looking on his own	2.6	3.0	2.1	2.9	3.1	2.6	1.6	2.3	0.6
Other means	5.4	6.7	3.9	4.6	6.1	2.7	8.1	8.4	7.6
Total (%)	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**
No. of valid observations**	1634	915	719	1249	701	548	385	214	171

* These tabulations do not consider some **few** observations that answered incorrectly or did not answer.

** Excluye encuestas de usuarios que no contestaron o contestaron mal esta pregunta.

nc / mc Did not answer / Answered incorrectly

Note: These tabulations exclude transients and children aged 14 and less.

A-3. Purposes for Using Cabinas Públicas

	All Users			Students			Non-students		
	Total	**Men**	**Women**	**Total**	**Men**	**Women**	**Total**	**Men**	**Women**
Number of observations	1752	978	774	1337	748	589	415	230	185
Purpose of use: Principal use (%) *									
Study related assignments	38.0	38.3	37.5	44.0	45.4	42.3	17.1	14.7	20.5
Keep in touch with family/friends	23.8	21.3	27.0	23.2	20.5	26.8	25.7	24.1	27.9
Employment related matters	4.9	5.9	3.6	1.7	1.9	1.4	16.1	19.4	11.5
Matters related to personal business	2.5	3.1	1.8	1.0	1.6	0.2	7.9	8.2	7.4
Literary/artistic works	1.0	0.7	1.4	0.8	0.5	1.1	1.7	1.2	2.5
Government transactions	0.8	1.1	0.4	0.3	0.4	0.2	2.4	3.5	0.8
Banking transactions	0.1	0.0	0.2	0.0	0.0	0.0	0.3	0.0	0.8
Job search	0.8	0.5	1.1	0.5	0.5	0.5	1.7	0.6	3.3
Buy/identify products via Internet	11.5	10.8	12.5	11.6	10.5	13.0	11.3	11.8	10.7
Learn computers and Internet use	2.2	2.6	1.8	1.9	1.8	2.0	3.4	5.3	0.8
Commercial learning	0.5	0.3	0.7	0.4	0.4	0.5	0.7	0.0	1.6
Academic learning	12.5	13.9	10.7	13.5	15.4	10.9	9.2	8.8	9.8
Recreation - entretainment - socializing	1.5	1.5	1.4	1.2	1.2	1.1	2.4	2.4	2.5
Total (%)	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Number of forms considered	1303	741	562	1011	571	440	292	170	122
Purpose of use: Secondary use (%) **									
Study related assignments	12.1	11.7	12.9	13.0	13.0	13.1	8.4	6.7	12.0
Keep in touch with family/friends	15.8	15.0	16.9	16.4	15.4	17.9	13.0	13.7	11.4
Employment related matters	5.6	5.7	5.4	4.7	4.5	4.9	9.4	10.1	8.0
Matters related to personal business	4.1	4.5	3.5	3.8	4.1	3.4	5.5	6.2	4.0
Literary/artistic works	5.0	5.1	4.9	5.0	5.2	4.8	4.8	4.7	5.1
Government transactions	3.8	4.1	3.5	3.4	3.4	3.4	5.9	6.7	4.0
Banking transactions	2.5	2.5	2.4	2.3	2.2	2.5	3.2	3.9	1.7
Job search	4.3	4.5	3.9	3.8	3.8	3.7	6.4	7.0	5.1
Buy/identify products via Internet	5.2	5.6	4.4	4.8	5.2	4.3	6.6	7.2	5.1
Learn computers and Internet use	10.7	11.1	10.2	11.4	12.2	10.2	8.0	7.0	10.3
Commercial learning	3.7	3.8	3.4	3.3	3.4	3.2	5.3	5.7	4.6
Academic learning	6.4	6.3	6.5	6.7	6.7	6.6	5.0	4.7	5.7
Recreation - entretainment - socializing	20.9	20.1	22.0	21.4	21.1	21.8	18.5	16.5	22.9
Total with respect to selected uses	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**
Total number of uses selected	2988	1819	1169	2426	1432	994	562	387	175
No. de users that answered this section	1213	708	505	979	558	421	234	150	84

* Question allowed only one answer per user.

** Question allowed for more than one answer per user.

Note: These tabulations exclude transients and children aged 14 and less.

A-4. Extent to which the Equipment and Services Available in Cabinas Publicas are Used Frequently

	All Users			Students			Non-students		
	Total	**Men**	**Women**	**Total**	**Men**	**Women**	**Total**	**Men**	**Women**
Number of observations	1752	978	774	1337	748	589	415	230	185
Use of equipment (% of users that indicated that they frequently use the following equipment)									
Telephone	12.4	12.2	12.7	11.9	11.0	13.3	13.9	16.5	10.6
Fax	2.1	1.9	2.4	1.6	0.9	2.9	4.0	5.5	2.1
Photocopying machine	8.1	7.2	9.3	7.6	6.6	9.1	9.6	9.3	9.9
Computer	68.8	71.7	64.9	70.4	72.4	67.6	63.9	69.2	56.0
Printer	13.8	13.0	14.8	13.4	12.2	14.9	15.2	15.9	14.2
Scanner	5.0	4.8	5.2	4.6	4.4	4.8	6.2	6.0	6.4
Videocamera	2.2	1.7	2.9	1.9	1.5	2.3	3.4	2.2	5.0
Equipment rental	9.3	9.6	8.9	9.8	10.1	9.5	7.4	7.7	7.1
Number of options marked in this section *	1767	1021	746	1369	780	589	398	241	157
Number of users considered **	1453	837	616	1130	655	475	323	182	141
Users considered as % of total	82.9	85.6	79.6	84.5	87.6	80.6	77.8	79.1	76.2
Uso of computers and/or Internet (% of users indicating that they make frequent use of the following services)									
Web page design - by user himself	7.4	7.8	7.0	7.6	8.1	7.0	6.8	6.7	6.9
Applications and software	10.6	12.0	8.7	10.8	12.4	8.8	9.8	10.9	8.3
e-mail	60.5	58.7	62.8	61.9	59.7	64.9	55.5	55.4	55.6
Search for information in the Net (WWW)	51.3	56.4	44.7	52.9	57.4	47.0	46.0	52.8	36.8
Telephone using computers (IP Telephony)	7.9	8.7	6.9	7.6	8.4	6.6	8.9	9.8	7.6
Internet games	16.2	15.4	17.3	16.8	17.3	16.3	14.2	9.3	20.8
Chat	39.1	38.6	39.7	41.3	41.7	40.8	31.5	28.0	36.1
Self-training using Internet	26.9	29.2	23.8	29.7	31.6	27.3	17.2	21.2	11.8
Number of options marked in this section *	3278	1924	1354	2638	1549	1089	640	375	265
Number of users considered **	1490	848	642	1153	655	498	337	193	144
Users considered as % of total	85.0	86.7	82.9	86.2	87.6	84.6	81.2	83.9	77.8
Courses sponsored by the *cabina* (% of users indicating that they make frequent use of the following *cabina* services)									
Computer, Internet or applications courses	28.3	26.3	31.1	26.8	25.9	28.6	33.7	29.3	40.3
Commercial courses	7.2	6.2	8.7	5.7	4.6	7.2	13.0	12.1	14.3
Academic courses	9.6	9.0	10.4	9.8	9.9	9.7	8.8	6.0	13.0
Number of options marked in this section *	405	221	184	298	166	132	107	55	52
Number of users considered **	899	532	367	706	416	290	193	116	77
Users considered as % of total	51.3	54.4	47.4	52.8	55.6	49.2	46.5	50.4	41.6

* Percentages do not add up to 100 because respondents some respondents made frequent use of more than one type of equipment or service.

** Excludes users that answered incorrectly or that did not mark any option in this section.

Note: These tabulations exclude transients and children aged 14 and less.

A-5. Prioridaties Assigned by Users to Different Kinds of Equipment

	All Users			Students			Non-students		
	Total	**Men**	**Women**	**Total**	**Men**	**Women**	**Total**	**Men**	**Women**
Número de observaciones	1752	978	774	1337	748	589	415	230	185
1st Priority - equipment									
Telephone	13.2	13.1	13.3	12.0	12.0	11.9	17.3	16.8	18.0
Fax	1.2	1.3	1.0	1.2	1.2	1.3	1.1	1.9	0.0
Photocopying machine	1.9	1.7	2.2	1.8	1.5	2.2	2.1	2.3	1.9
Computer	72.1	72.4	71.7	73.5	74.2	72.6	67.7	66.8	68.9
Printer	3.6	4.2	2.7	3.3	4.2	2.1	4.5	4.2	5.0
Scanner	2.1	1.7	2.6	2.0	1.5	2.8	2.1	2.3	1.9
Videocamera	1.9	2.0	1.9	2.0	2.2	1.9	1.6	1.4	1.9
Equipment rental	3.9	3.4	4.4	4.1	3.4	5.0	3.2	3.7	2.5
Other	0.1	0.1	0.1	0.1	0.0	0.2	0.3	0.5	0.0
Total (%)	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**
Número de usuarios considerados en el cálculo *	1596	899	697	1221	685	536	375	214	161
Usuarios considerados como % de observ. totales	91.1	91.9	90.1	91.3	91.6	91.0	90.4	93.0	87.0
2nd Priority - equipment									
Telephone	14.0	13.8	14.2	14.6	14.7	14.5	11.6	10.8	12.9
Fax	4.5	5.2	3.7	4.1	4.8	3.2	6.0	6.5	5.3
Photocopying machine	7.8	7.1	8.7	7.4	6.8	8.1	9.1	8.1	10.6
Computer	10.7	10.0	11.7	10.9	9.9	12.2	10.1	10.2	9.8
Printer	41.4	40.8	42.2	41.7	41.9	41.5	40.3	37.1	44.7
Scanner	8.3	8.5	8.0	8.6	8.6	8.5	7.2	8.1	6.1
Videocamera	6.0	6.3	5.5	5.9	6.0	5.8	6.3	7.5	4.5
Equipment rental	7.3	8.2	6.0	6.7	7.3	6.0	9.1	11.3	6.1
Other	0.1	0.1	0.2	0.1	0.0	0.2	0.3	0.5	0.0
Número de usuarios considerados en el cálculo	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**
Usuarios considerados como % del total	1390	790	600	1072	604	468	318	186	132
	79.3	80.8	77.5	80.2	80.7	79.5	76.6	80.9	71.4

* Excludes users that answered incorrectly or that did not mark any option in this section.

Note: These tabulations exclude transients and children aged 14 and less.

A-6. Priorities Assigned by Users to Different Kinds of Services

	All Users			Students			Non-students		
	Total	**Men**	**Women**	**Total**	**Men**	**Women**	**Total**	**Men**	**Women**
Number of observations	1752	978	774	1337	748	589	415	230	185
1st Priority - Services (%)									
Web page design - by user himself	6.4	6.3	6.6	6.3	6.3	6.4	6.7	6.2	7.4
Applications and software	1.8	2.1	1.5	1.9	2.1	1.6	1.7	1.9	1.4
e-mail	30.0	28.8	31.5	28.7	26.8	31.3	34.2	35.4	32.4
Search for information in the Net (WWW)	34.2	34.9	33.2	34.1	35.0	32.9	34.5	34.4	34.5
Telephone using computers (IP Telephony)	2.0	2.3	1.7	1.9	2.1	1.6	2.5	2.9	2.0
Internet games	1.0	1.1	0.8	1.1	1.2	1.0	0.6	1.0	0.0
Chat	10.1	10.6	9.4	11.4	12.4	10.0	5.9	4.8	7.4
Self-training using Internet	1.4	1.5	1.4	1.4	1.3	1.4	1.7	1.9	1.4
Courses sponsored by the *cabina* - computers, Internet	3.5	3.2	4.0	3.3	3.1	3.6	4.2	3.3	5.4
Courses sponsored by the *cabina* - commercial	0.3	0.3	0.3	0.3	0.3	0.2	0.6	0.5	0.7
Courses sponsored by the *cabina* - academic	5.8	5.0	6.8	5.8	4.8	7.2	5.6	5.7	5.4
Services provided by the *cabina* - typing	0.1	0.1	0.2	0.1	0.1	0.0	0.3	0.0	0.7
Services provided by the *cabina* - videoconferencing	1.2	1.4	1.1	1.3	1.3	1.2	1.1	1.4	0.7
Services provided by the *cabina* - web page design	0.9	1.3	0.5	1.1	1.5	0.6	0.3	0.5	0.0
Other (miscellaneos)	1.2	1.3	1.1	1.5	1.6	1.2	0.3	0.0	0.7
Total (%)	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**
Number of users considered in calculations *	1528	878	650	1171	669	502	357	209	148
Users considered as % of total No. of observations	87.2	89.8	84.0	87.6	89.4	85.2	86.0	90.9	80.0
2nd Priority - Services (%)									
Web page design - by user himself	5.1	6.1	3.6	5.3	6.5	3.5	4.5	4.7	4.0
Applications and software	4.1	4.8	3.1	3.5	4.1	2.6	6.1	6.8	4.8
e-mail	25.8	24.2	28.1	26.7	25.0	29.1	22.6	21.6	24.2
Search for information in the Net (WWW)	19.4	19.7	19.1	19.1	19.6	18.5	20.4	20.0	21.0
Telephone using computers (IP Telephony)	4.9	4.8	5.2	4.6	4.3	5.1	6.1	6.3	5.6
Internet games	2.7	3.2	1.9	3.1	3.8	2.0	1.3	1.1	1.6
Chat	16.4	16.1	16.8	17.6	16.9	18.5	12.4	13.7	10.5
Self-training using Internet	2.4	2.6	2.3	2.2	2.4	2.0	3.2	3.2	3.2
Courses sponsored by the *cabina* - computers, Internet	7.4	6.8	8.1	6.7	5.9	7.7	9.9	10.0	9.7
Courses sponsored by the *cabina* - commercial	1.1	0.9	1.4	0.9	0.8	1.1	1.6	1.1	2.4
Courses sponsored by the *cabina* - academic	6.1	6.1	6.1	5.6	5.7	5.5	7.6	7.4	8.1
Services provided by the *cabina* - typing	0.4	0.4	0.3	0.5	0.5	0.4	0.0	0.0	0.0
Services provided by the *cabina* - videoconferencing	2.9	2.8	3.1	2.7	2.7	2.6	3.8	3.2	4.8
Services provided by the *cabina* - web page design	0.9	1.0	0.7	1.0	1.1	0.9	0.3	0.5	0.0
Other (miscellaneos)	0.4	0.6	0.2	0.5	0.6	0.2	0.3	0.5	0.0
Total (%)	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**
Number of users considered in calculations *	1395	818	577	1081	628	453	314	190	124
Users considered as % of total No. of observations	79.6	83.6	74.5	80.9	84.0	76.9	75.7	82.6	67.0

* Excludes users that answered incorrectly or that did not mark any option in this section.

Note: These tabulations exclude transients and children aged 14 and less.

A-7. Objetives of Surveyed Users

	All Users			Students			Non-students		
	Total	**Men**	**Women**	**Total**	**Men**	**Women**	**Total**	**Men**	**Women**
Número de observaciones	1752	978	774	1337	748	589	415	230	185
% de usuarios que indicaron tener siguiente objetivo (%) *									
Improve in school or studies	72.5	75.1	69.7	80.2	82.8	77.0	48.4	50.5	45.8
Improve work related skills	52.6	56.4	47.7	49.6	54.0	44.1	62.2	64.2	59.5
Work far from employer's headquarters (telework)	21.5	23.3	19.3	22.4	24.0	20.5	18.7	21.1	15.5
Find employment	30.6	33.2	27.4	31.8	34.3	28.5	26.9	29.4	23.8
Improve skills to get a better job	41.6	44.5	37.9	42.2	45.0	38.6	39.6	42.7	35.7
Have more confidence in myself	41.5	41.1	42.0	44.1	43.7	44.6	32.9	32.6	33.3
Improve ability to use computers	63.8	66.6	60.3	66.2	69.4	62.2	56.2	57.8	54.2
Overcome anxiety or fear of using computers	27.4	28.6	25.9	29.4	30.7	27.8	21.0	22.0	19.6
Increase earnings from farm or business	21.6	25.9	16.2	21.6	26.3	15.7	21.8	24.8	17.9
Make personal purchases at better prices, higher quality, etc.	22.8	25.5	19.4	23.5	26.6	19.6	20.7	22.0	19.0
Save time on personal transactions (e.g. with government)	26.8	28.3	24.9	27.1	27.7	26.3	25.9	30.3	20.2
Keep better informed	57.6	62.1	51.7	59.5	63.3	54.7	51.3	58.3	42.3
Carry out a literary or artistic endeavor	30.3	30.8	29.7	33.5	34.3	32.5	19.9	19.7	20.2
Find a mate, make new or keep friendships	44.6	44.3	45.0	49.8	49.2	50.5	28.2	28.9	27.4
Entertainment (computer games, socialize, hobby)	47.6	50.2	44.3	53.5	55.4	51.2	28.5	33.5	22.0
Number of users considered in calculations *	1626	911	715	1240	693	547	386	218	168
Users considered as a % of total	92.8	93.1	92.4	92.7	92.6	92.9	93.0	94.8	90.8

A-8.a. Extent to which Users Feel they have Achieved their own Goals in Reference to their Stated Objectives - Page 1 of 3

	All Users			Students			Non-students		
	Total	**Men**	**Women**	**Total**	**Men**	**Women**	**Total**	**Men**	**Women**
Number of observations	1752	978	774	1337	748	589	415	230	185
Objectives and extent of advance towards personal goals									
Improve in school or studies									
none	5.8	5.4	6.4	5.1	4.6	5.8	10.3	10.5	10.0
some	46.2	47.9	43.7	46.7	49.0	43.4	42.9	40.8	46.0
close to achieving goal	39.8	38.5	41.6	39.7	38.0	42.2	40.5	42.1	38.0
goal has been met	8.2	8.2	8.3	8.5	8.5	8.6	6.3	6.6	6.0
Total (%)	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**
Number of users considered in these calculations *	912	537	375	786	461	325	126	76	50
Users considered as a % of observations with this objective	77.2	78.5	75.3	79.0	80.3	77.2	67.4	69.1	64.9
Improve work related skills									
none	14.1	14.2	14.0	5.1	15.3	17.7	7.3	10.6	1.8
some	47.2	47.9	46.1	46.7	49.5	48.4	41.1	42.6	38.6
close to achieving goal	33.5	32.9	34.6	39.7	30.6	29.6	44.4	40.4	50.9
goal has been met	5.1	5.0	5.3	8.5	4.6	4.3	7.3	6.4	8.8
Total (%)	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**
Number of users considered in these calculations *	644	401	243	786	307	186	151	94	57
Users considered as a % of observations with this objective	75.3	78.0	71.3	79.0	82.1	77.2	62.9	67.1	57.0
Work far from employer's headquarters									
none	52.7	54.7	49.5	54.3	55.6	52.3	43.9	50.0	30.8
some	28.5	24.8	34.3	29.2	24.8	36.0	24.4	25.0	23.1
close to achieving goal	12.7	15.5	8.1	10.5	14.3	4.7	24.4	21.4	30.8
goal has been met	6.2	5.0	8.1	5.9	5.3	7.0	7.3	3.6	15.4
Total (%)	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**
Number of users considered in these calculations *	260	161	99	219	133	86	41	28	13
Users considered as a % of observations with this objective	74.3	75.9	71.7	78.8	80.1	76.8	56.9	60.9	50.0
Find employment									
none	56.3	53.6	61.0	56.7	52.6	63.8	54.4	58.1	48.0
some	24.2	27.2	19.1	24.4	27.6	19.0	23.5	25.6	20.0
close to achieving goal	16.6	15.9	17.7	16.7	16.8	16.4	16.2	11.6	24.0
goal has been met	2.9	3.3	2.1	2.2	3.1	0.9	5.9	4.7	8.0
Total (%)	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**
Number of users considered in these calculations *	380	239	141	312	196	116	68	43	25
Users considered as a % of observations with this objective	76.3	79.1	71.9	79.2	82.4	74.4	65.4	67.2	62.5
Improve skills to get a better job									
none	21.0	21.0	21.1	22.3	21.5	23.6	15.6	19.0	9.1
some	47.0	46.8	47.4	46.3	46.2	46.6	50.0	49.2	51.5
close to achieving goal	27.4	27.7	26.8	27.2	28.3	25.5	28.1	25.4	33.3
goal has been met	4.6	4.5	4.6	4.2	4.0	4.3	6.3	6.3	6.1
Total (%)	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**
Number of users considered in these calculations *	504	310	194	408	247	161	96	63	33
Users considered as a % of observations with this objective	74.6	76.5	71.6	78.0	79.2	76.3	62.7	67.7	55.0

* Excludes users that answered incorrectly or that did not mark any option in this section.

** Refers only to those users that marked this one as an objective of his.

Note: These tabulations exclude transients and children aged 14 and less.

A-8.b. Extent to which Users Feel they have Achieved their own Goals in Reference to their Stated Objectives - Page 2 of 3

	All Users			Students			Non-students		
	Total	Men	Women	Total	Men	Women	Total	Men	Women
Number of observations	1752	978	774	1337	748	589	415	230	185
Objectives and extent of advance towards personal goals									
Have more confidence in myself									
none	11.0	14.0	7.0	11.8	14.8	8.2	6.4	10.2	0.0
some	34.6	34.1	35.2	32.9	32.6	33.2	43.6	40.8	48.3
close to achieving goal	35.4	32.3	39.4	35.7	32.2	40.2	33.3	32.7	34.5
goal has been met	19.1	19.7	18.3	19.6	20.4	18.5	16.7	16.3	17.2
Total (%)	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**
Number of users considered in these calculations *	492	279	213	414	230	184	78	49	29
Users considered as a % of observations with this objective	73.0	74.6	71.0	75.7	75.9	75.4	61.4	69.0	51.8
Improve ability to use computers									
none	3.4	2.4	5.0	3.2	1.9	5.3	4.2	4.7	3.6
some	40.1	38.8	42.1	39.5	37.8	42.0	43.0	43.0	42.9
close to achieving goal	44.2	44.6	43.5	44.9	46.0	43.2	40.8	38.4	44.6
goal has been met	12.3	14.2	9.4	12.4	14.3	9.5	12.0	14.0	8.9
Total (%)	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**
Number of users considered in these calculations *	763	464	299	621	378	243	142	86	56
Users considered as a % of observations with this objective	73.5	76.4	69.4	75.6	78.6	71.5	65.4	68.3	61.5
Overcome anxiety or fear of using computers									
none	19.6	19.1	20.5	19.4	19.2	19.7	21.3	18.8	26.7
some	27.2	28.6	25.0	27.5	28.1	26.5	25.5	31.3	13.3
close to achieving goal	25.7	27.1	23.5	25.4	26.9	23.1	27.7	28.1	26.7
goal has been met	27.5	25.1	31.1	27.8	25.7	30.8	25.5	21.9	33.3
Total (%)	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**
Number of users considered in these calculations *	331	199	132	284	167	117	47	32	15
Users considered as a % of observations with this objective	74.2	76.2	71.4	77.8	78.4	77.0	58.0	66.7	45.5
Increase earnings from farm or business									
none	50.7	49.7	52.8	54.3	51.3	60.3	34.0	41.9	18.8
some	31.1	35.4	22.5	30.0	35.3	19.2	36.2	35.5	37.5
close to achieving goal	12.2	8.8	19.1	10.3	7.3	16.4	21.3	16.1	31.3
goal has been met	5.9	6.1	5.6	5.4	6.0	4.1	8.5	6.5	12.5
Total (%)	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**
Number of users considered in these calculations *	270	181	89	223	150	73	47	31	16
Users considered as a % of observations with this objective	76.7	76.7	76.7	83.2	82.4	84.9	56.0	57.4	53.3
Make purchases at better price, higher quality, etc.									
none	42.8	45.5	38.0	45.4	46.6	43.2	31.4	40.6	15.8
some	36.7	36.5	37.0	36.1	34.9	38.3	39.2	43.8	31.6
close to achieving goal	14.4	12.4	18.0	12.8	12.3	13.6	21.6	12.5	36.8
goal has been met	6.1	5.6	7.0	5.7	6.2	4.9	7.8	3.1	15.8
Total (%)	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**
Number of users considered in these calculations *	278	178	100	227	146	81	51	32	19
Users considered as a % of observations with this objective	74.9	76.7	71.9	78.0	79.3	75.7	63.8	66.7	59.4

* Excludes users that answered incorrectly or that did not mark any option in this section.

** Refers only to those users that marked this one as an objective of his.

Note: These tabulations exclude transients and children aged 14 and less.

A-8.c. Extent to which Users Feel they have Achieved their own Goals in Reference to their Stated Objectives - Page 3 of 3

	All Users			Students			Non-students		
	Total	**Men**	**Women**	**Total**	**Men**	**Women**	**Total**	**Men**	**Women**
Number of observations	1752	978	774	1337	748	589	415	230	185
Objectives and extent of advance towards personal goals									
Save time in personal transactions (e.g. with government)									
none	36.7	41.7	28.8	39.2	44.4	31.8	26.6	32.6	11.1
some	35.2	31.2	41.6	33.5	30.1	38.3	42.2	34.8	61.1
close to achieving goal	18.5	17.6	20.0	18.5	17.6	19.6	18.8	17.4	22.2
goal has been met	9.6	9.5	9.6	8.8	7.8	10.3	12.5	15.2	5.6
Total (%)	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**
Number of users considered in these calculations *	324	199	125	260	153	107	64	46	18
Users considered as a % of observations with this objective	74.3	77.1	70.2	77.4	79.7	74.3	64.0	69.7	52.9
Keep better informed									
none	6.3	5.4	7.9	6.8	5.4	8.9	4.4	5.3	2.4
some	41.4	41.7	40.8	40.0	40.3	39.6	47.1	46.8	47.6
close to achieving goal	35.4	35.1	36.0	35.3	35.1	35.6	36.0	35.1	38.1
goal has been met	16.9	17.8	15.4	17.9	19.1	16.0	12.5	12.8	11.9
Total (%)	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**
Number of users considered in these calculations *	711	444	267	575	350	225	136	94	42
Users considered as a % of observations with this objective	76.0	78.4	72.2	77.9	79.7	75.3	68.7	74.0	59.2
Carry out a literary or artistic endeavor									
none	33.4	36.9	28.2	33.9	37.0	29.2	29.5	36.0	21.1
some	32.9	33.8	31.5	32.4	34.5	29.2	36.4	28.0	47.4
close to achieving goal	23.8	19.1	30.9	24.5	19.5	32.3	18.2	16.0	21.1
goal has been met	9.9	10.2	9.4	9.1	9.0	9.2	15.9	20.0	10.5
Total (%)	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**
Number of users considered in these calculations *	374	225	149	330	200	130	44	25	19
Users considered as a % of observations with this objective	75.9	80.1	70.3	79.3	84.0	73.0	57.1	58.1	55.9
Find mate, make new or keep existing friendships									
none	15.5	19.5	10.4	16.0	20.0	10.8	12.5	16.3	6.9
some	36.1	36.4	35.7	35.7	35.9	35.4	38.9	39.5	37.9
close to achieving goal	26.4	23.3	30.3	25.9	23.3	29.2	29.2	23.3	37.9
goal has been met	22.0	20.8	23.7	22.4	20.7	24.5	19.4	20.9	17.2
Total (%)	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**
Number of users considered in these calculations *	554	313	241	482	270	212	72	43	29
Users considered as a % of observations with this objective	76.3	77.5	74.8	78.1	79.2	76.8	66.1	68.3	63.0
Entertainment (computer games, socialize, hobbies)									
none	11.2	12.9	8.5	10.7	12.8	7.5	14.7	13.5	17.4
some	42.6	45.5	37.9	41.0	43.4	37.3	53.3	57.7	43.5
close to achieving goal	25.7	21.3	32.6	26.3	22.0	32.8	21.3	17.3	30.4
goal has been met	20.5	20.2	21.0	22.0	21.7	22.4	10.7	11.5	8.7
Total (%)	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**
Number of users considered in these calculations *	580	356	224	505	304	201	75	52	23
Users considered as a % of observations with this objective	74.9	77.9	70.7	76.1	79.2	71.8	68.2	71.2	62.2

* Excludes users that answered incorrectly or that did not mark any option in this section.

** Refers only to those users that marked this one as an objective of his.

Note: These tabulations exclude transients and children aged 14 and less.

A-9. Perceived Change in Ability to Use Computers and Modern Means of Communication; Experience Using the Cabina

	All Users			Students			Non-students		
	Total	**Men**	**Women**	**Total**	**Men**	**Women**	**Total**	**Men**	**Women**
Number of observations	1752	978	774	1337	748	589	415	230	185
How much do you feel your ability to use computers and modern information means has improved, as a result of using the cabina pública?									
great advance	46.9	48.8	44.5	46.4	49.1	42.9	48.7	47.7	50.0
some improvement	44.7	43.2	46.6	45.4	43.7	47.6	42.3	41.6	43.3
not much change	7.7	7.5	8.1	7.4	6.4	8.5	9.0	10.7	6.7
worse than before	0.6	0.5	0.7	0.8	0.7	0.9	0.0	0.0	0.0
Total (%)	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**
Number of users considered in these calculations *	1626	912	714	1248	698	550	378	214	164
Users considered as a % of total number of observations	92.8	93.3	92.2	93.3	93.3	93.4	91.1	93.0	88.6
How long have you been using this *cabina*?									
this is the first time	11.6	11.9	11.2	10.9	11.4	10.3	13.8	13.6	14.2
less than 6 months	48.3	46.1	51.1	50.1	48.8	51.7	42.3	37.4	48.8
6 months to a year	20.2	20.9	19.2	19.8	20.0	19.6	21.3	23.8	17.9
over one year	20.0	21.1	18.5	19.2	19.9	18.3	22.6	25.2	19.1
Total (%)	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**
Number of users considered in these calculations *	1616	909	707	1240	695	545	376	214	162
Users considered as a % of total number of observations	92.2	92.9	91.3	92.7	92.9	92.5	90.6	93.0	87.6

* Excludes surveyed users that did not answer this question.

A-10.a. User Assessment of Quality of Service Offered by the Cabina - Page 1 of 2

	All Users			Students			Non-students		
	Total	**Men**	**Women**	**Total**	**Men**	**Women**	**Total**	**Men**	**Women**
Number of observations	1752	978	774	1337	748	589	415	230	185
User assessment of feature or service:									
Ambiance (comfort, lighting, etc)									
Excellent	16.5	15.1	18.2	16.1	16.3	15.8	17.8	11.2	26.3
Good	48.4	48.4	48.5	47.7	46.8	48.7	50.9	53.3	47.9
Satisfactory	26.9	28.3	25.1	27.6	28.2	26.7	24.7	28.5	19.8
Poor	8.2	8.2	8.1	8.7	8.6	8.8	6.6	7.0	6.0
Total (%)	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**
Number of users considered in these calculations *	1625	912	713	1244	698	546	381	214	167
Users considered as a % of total number of observations	92.8	93.3	92.1	93.0	93.3	92.7	91.8	93.0	90.3
Equipment									
Excellent	8.3	7.8	9.0	7.5	7.5	7.5	10.9	8.6	13.9
Good	40.8	40.0	41.9	38.8	38.1	39.7	47.7	46.4	49.4
Satisfactory	32.5	35.4	28.6	33.8	36.6	30.1	28.1	31.6	23.4
Poor	18.4	16.8	20.5	19.9	17.8	22.6	13.4	13.4	13.3
Total (%)	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**
Number of users considered in these calculations *	1589	900	689	1222	691	531	367	209	158
Users considered as a % of total number of observations	90.7	92.0	89.0	91.4	92.4	90.2	88.4	90.9	85.4
Internet connection									
Excellent	14.5	13.9	15.4	12.9	12.4	13.5	20.0	18.7	21.7
Good	43.2	40.8	46.4	41.8	39.4	44.8	48.2	45.3	52.0
Satisfactory	32.9	35.0	30.3	35.3	37.0	33.1	24.8	28.1	20.4
Poor	9.3	10.4	8.0	10.0	11.1	8.6	7.0	7.9	5.9
Total (%)	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**
Number of users considered in these calculations *	1555	878	677	1200	675	525	355	203	152
Users considered as a % of total number of observations	88.8	89.8	87.5	89.8	90.2	89.1	85.5	88.3	82.2
Cost									
Excellent	38.8	39.7	37.7	40.1	40.6	39.4	34.6	36.3	32.5
Good	36.9	35.8	38.4	34.5	34.2	34.8	45.1	41.1	50.0
Satisfactory	21.0	21.0	21.0	21.7	21.0	22.7	18.6	21.1	15.6
Poor	3.3	3.5	2.9	3.7	4.1	3.2	1.7	1.6	1.9
Total (%)	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**
Number of users considered in these calculations *	1504	847	657	1160	657	503	344	190	154
Users considered as a % of total number of observations	85.8	86.6	84.9	86.8	87.8	85.4	82.9	82.6	83.2
Software									
Excellent	11.3	11.6	10.9	10.2	11.4	8.6	15.4	12.3	19.7
Good	46.6	44.8	49.1	45.9	44.4	48.0	49.5	46.6	53.3
Satisfactory	30.6	31.1	30.0	31.7	31.2	32.4	26.7	30.7	21.3
Poor	11.4	12.5	9.9	12.2	13.0	11.0	8.4	10.4	5.7
Total (%)	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**
Number of users considered in these calculations *	1368	792	576	1083	629	454	285	163	122
Users considered as a % of total number of observations	78.1	81.0	74.4	81.0	84.1	77.1	68.7	70.9	65.9

* Excludes surveyed users that did not mark a response in this section.

Note: These tabulations exclude transients and children aged 14 and less.

A-10.b. User Assessment of Quality of Service Offered by the Cabina - Page 2 of 2

	All Users			Students			Non-students		
	Total	**Men**	**Women**	**Total**	**Men**	**Women**	**Total**	**Men**	**Women**
Number of observations	1752	978	774	1337	748	589	415	230	185
User assessment of feature or service:									
Technical ability of staff (to solve problems, etc.)									
Excellent	20.3	19.0	21.9	19.2	18.5	20.1	23.9	20.7	28.3
Good	44.8	43.9	46.0	43.5	42.5	44.8	49.3	48.5	50.3
Satisfactory	27.2	29.7	24.0	29.4	31.4	26.7	20.1	24.2	14.5
Poor	7.7	7.4	8.1	8.0	7.7	8.4	6.7	6.6	6.9
Total (%)	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**
Number of users considered in these calculations *	1491	848	643	1148	650	498	343	198	145
Users considered as a % of total number of observations	85.1	86.7	83.1	85.9	86.9	84.6	82.7	86.1	78.4
Staff disposition (amiability, willingness to help)									
Excellent	31.2	29.9	32.8	29.3	29.3	29.3	37.4	31.9	44.7
Good	40.4	41.6	38.9	40.5	41.3	39.6	39.9	42.5	36.5
Satisfactory	19.9	20.8	18.8	21.0	21.1	20.8	16.4	19.8	11.9
Poor	8.5	7.8	9.5	9.2	8.3	10.3	6.3	5.8	6.9
Total (%)	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**
Number of users considered in these calculations *	1572	890	682	1206	683	523	366	207	159
Users considered as a % of total number of observations	89.7	91.0	88.1	90.2	91.3	88.8	88.2	90.0	85.9
Hours of service open to the public									
Excellent	33.4	30.8	36.7	33.6	31.8	36.0	32.5	27.5	39.0
Good	45.4	46.6	43.9	44.7	45.2	44.0	47.8	51.2	43.4
Satisfactory	17.5	17.8	17.1	17.7	17.6	17.9	16.7	18.4	14.5
Poor	3.7	4.8	2.3	4.0	5.4	2.1	3.0	2.9	3.1
Total (%)	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**
Number of users considered in these calculations *	1574	890	684	1208	683	525	366	207	159
Users considered as a % of total number of observations	89.8	91.0	88.4	90.4	91.3	89.1	88.2	90.0	85.9
Courses and training									
Excellent	10.4	8.7	12.6	9.8	8.6	11.3	12.7	9.2	17.6
Good	40.4	38.2	43.3	39.0	37.1	41.4	45.5	42.0	50.4
Satisfactory	30.8	32.8	28.1	31.0	32.0	29.6	30.1	35.6	22.4
Poor	18.4	20.3	16.0	20.3	22.3	17.7	11.7	13.2	9.6
Total (%)	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**
Number of users considered in these calculations *	1374	780	594	1075	606	469	299	174	125
Users considered as a % of total number of observations	78.4	79.8	76.7	80.4	81.0	79.6	72.0	75.7	67.6

* Excludes surveyed users that did not mark a response in this section.

Note: These tabulations exclude transients and children aged 14 and less.

A-11. Changes Proposed by Users to Improve the Quality of Service in the Cabina

	All Users			Students			Non-students		
	Total	**Men**	**Women**	**Total**	**Men**	**Women**	**Total**	**Men**	**Women**
Number of observations:	1752	978	774	1337	748	589	415	230	185
% of users that recommended changes with respect to:									
Diligent and permanent assistance	18.4	16.4	21.2	17.0	13.5	21.5	24.1	26.7	20.0
Promotions and offers (affordable prices)	0.5	0.6	0.5	0.5	0.5	0.6	0.5	0.8	0.0
Smoking section	0.1	0.2	0.0	0.1	0.2	0.0	0.0	0.0	0.0
Private service	0.2	0.0	0.5	0.1	0.0	0.3	0.5	0.0	1.3
User guides and counsel	1.2	0.9	1.5	1.2	0.9	1.6	1.0	0.8	1.3
Improve equipments, software and maintenance	47.4	48.7	45.7	48.7	51.2	45.5	42.6	40.0	46.7
Courses	0.1	0.2	0.0	0.1	0.2	0.0	0.0	0.0	0.0
Optimization and speed and broadband	10.2	10.7	9.6	10.4	10.9	9.7	9.7	10.0	9.3
Staff - necessary and trained	1.1	1.1	1.0	1.1	1.2	0.9	1.0	0.8	1.3
Enhance the environment	19.6	19.7	19.4	19.8	20.1	19.3	19.0	18.3	20.0
Publicity and marketing	0.2	0.4	0.0	0.1	0.2	0.0	0.5	0.8	0.0
Give auxiliary services (*scanner,* diskettes, printing, coffee)	0.9	1.1	0.5	0.8	0.9	0.6	1.0	1.7	0.0
Number of users who made recommendations	938	542	396	743	422	321	195	120	75
Users considered as a % of total	53.5	55.4	51.2	55.6	56.4	54.5	47.0	52.2	40.5

A-12.a. Proportion of Cabina Users that Browse the Web and Contents of Interest to Browsers - Page 1 of 3

	Nacional			Estudiantes			No estudiantes		
	Total	**Hombres**	**Mujeres**	**Total**	**Hombres**	**Mujeres**	**Total**	**Hombres**	**Mujeres**
Number of observations (users surveyed)	1752	978	774	1337	748	589	415	230	185
Number of users surveyed that search for information in the Web	1283	747	536	1009	575	434	274	172	102
% of users surveyed that search for information in the Web	73.2	76.4	69.3	75.5	76.9	73.7	66.0	74.8	55.1
Types of contents and degree of interest									
Education (distance ed., teacher networks, educational material, etc)									
Very interested	51.0	50.2	52.0	48.1	47.4	49.2	62.2	60.9	64.3
Some interest	36.4	37.0	35.6	38.4	38.8	37.8	28.6	30.1	26.2
No interest	12.6	12.8	12.4	13.5	13.7	13.1	9.2	9.0	9.5
Total (%)	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**
Number of users considered in these calculations *	1079	635	444	862	502	360	217	133	84
Users considered as a % of those that search for info. in the Web	84.1	85.0	82.8	85.4	87.3	82.9	79.2	77.3	82.4
Health (consultations, medicines, illnesses, remedies, doctors)									
Very interested	35.5	30.3	42.9	34.2	28.2	42.5	41.1	38.8	44.7
Some interest	46.3	48.7	42.9	46.6	49.1	43.1	45.3	47.4	42.1
No interest	18.2	21.0	14.2	19.2	22.8	14.4	13.5	13.8	13.2
Total (%)	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**
Number of users considered in these calculations *	1019	595	424	827	479	348	192	116	76
Users considered as a % of those that search for info. in the Web	79.4	79.7	79.1	82.0	83.3	80.2	70.1	67.4	74.5
Academic research in various disciplines									
Very interested	65.7	66.6	64.3	64.7	64.7	64.7	69.4	73.4	62.0
Some interest	27.9	27.5	28.5	28.4	28.6	28.1	26.1	23.8	30.4
No interest	6.4	5.8	7.2	6.9	6.7	7.2	4.5	2.8	7.6
Total (%)	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**
Number of users considered in these calculations *	1092	650	442	870	507	363	222	143	79
Users considered as a % of those that search for info. in the Web	85.1	87.0	82.5	86.2	88.2	83.6	81.0	83.1	77.5
Technical information (agricultural practices, industrial production methods)									
Very interested	30.9	34.8	24.9	28.0	31.2	23.1	43.2	48.7	33.3
Some interest	35.7	35.5	36.1	37.2	37.3	37.0	29.5	28.2	31.8
No interest	33.4	29.8	39.0	34.9	31.5	39.9	27.3	23.1	34.8
Total (%)	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**
Number of users considered in these calculations *	952	578	374	769	461	308	183	117	66
Users considered as a % of those that search for info. in the Web	74.2	77.4	69.8	76.2	80.2	71.0	66.8	68.0	64.7

* Excludes users that answered incorrectly or did not give an indication of degree of interest in this type of content.

Note: These tabulations exclude transients and children aged 14 and less.

A-12.b. Proportion of Cabina Users that Browse the Web and Contents of Interest to Browsers - Page 2 of 3

	Nacional			Estudiantes			No estudiantes		
	Total	**Hombres**	**Mujeres**	**Total**	**Hombres**	**Mujeres**	**Total**	**Hombres**	**Mujeres**
Number of observations (users surveyed)	1752	978	774	1337	748	589	415	230	185
Number of users surveyed that search for information in the Web	1283	747	536	1009	575	434	274	172	102
% of users surveyed that search for information in the Web	73.2	76.4	69.3	75.5	76.9	73.7	66.0	74.8	55.1
Types of contents and degree of interest									
Job markets (placement/inspection of curriculums, job market information)									
Very interested	22.1	19.4	26.0	19.4	16.7	23.3	33.7	30.6	38.6
Some interest	37.4	38.7	35.6	37.0	39.3	33.6	39.3	36.1	44.3
No interest	40.5	41.9	38.4	43.6	44.0	43.1	27.0	33.3	17.1
Total (%)	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**
Number of users considered in these calculations *	951	563	388	773	455	318	178	108	70
Users considered as a % of those that search for info. in the Web	74.1	75.4	72.4	76.6	79.1	73.3	65.0	62.8	68.6
Artistic (museums, events, online exhibits, listings of artists)									
Very interested	32.3	27.5	39.2	34.2	28.6	42.0	23.6	22.4	25.4
Some interest	48.5	50.4	45.7	47.2	49.0	44.6	54.5	57.0	50.7
No interest	19.2	22.1	15.1	18.7	22.4	13.3	21.9	20.6	23.9
Total (%)	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**
Number of users considered in these calculations *	1009	593	416	831	486	345	178	107	71
Users considered as a % of those that search for info. in the Web	78.6	79.4	77.6	82.4	84.5	79.5	65.0	62.2	69.6
Recreational (games, movies, music)									
Very interested	37.5	36.1	39.5	39.7	38.4	41.5	27.2	25.7	29.6
Some interest	49.3	50.5	47.6	49.1	49.9	47.8	50.5	53.1	46.5
No interest	13.2	13.4	12.9	11.3	11.7	10.7	22.3	21.2	23.9
Total (%)	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**
Number of users considered in these calculations *	1028	610	418	844	497	347	184	113	71
Users considered as a % of those that search for info. in the Web	80.1	81.7	78.0	83.6	86.4	80.0	67.2	65.7	69.6
Citizen safety in emergency situations (earthquakes, hurricanes, etc.)									
Very interested	16.8	13.9	21.0	15.2	11.7	20.5	23.9	24.2	23.4
Some interest	45.6	44.2	47.7	46.2	45.0	47.9	42.9	40.4	46.9
No interest	37.6	41.8	31.3	38.6	43.3	31.7	33.1	35.4	29.7
Total (%)	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**
Number of users considered in these calculations *	919	552	367	756	453	303	163	99	64
Users considered as a % of those that search for info. in the Web	71.6	73.9	68.5	74.9	78.8	69.8	59.5	57.6	62.7

* Excludes users that answered incorrectly or did not give an indication of degree of interest in this type of content.

Note: These tabulations exclude transients and children aged 14 and less.

A-12.c. Proportion of Cabina Users that Browse the Web and Contents of Interest to Browsers - Page 3 of 3

		All Users			Students			Non-students		
		Total	**Men**	**Women**	**Total**	**Men**	**Women**	**Total**	**Men**	**Women**
Number of observations (users surveyed)		1752	978	774	1337	748	589	415	230	185
Number of users surveyed that search for information in the Web		1283	747	536	1009	575	434	274	172	102
% of users surveyed that search for information in the Web		73.2	76.4	69.3	75.5	76.9	73.7	66.0	74.8	55.1
Types of contents and degree of interest										
Tourist information (hotel accomodations, tickets, car rental)										
Very interested		25.2	21.4	31.1	24.8	19.2	33.1	27.1	30.4	21.2
Some interest		45.7	48.1	41.8	44.3	47.8	39.2	51.4	49.6	54.5
No interest		29.1	30.4	27.1	30.9	33.0	27.7	21.5	20.0	24.2
	Total (%)	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**
Number of users considered in these calculations *		968	588	380	787	473	314	181	115	66
Users considered as a % of those that search for info. in the Web		75.4	78.7	70.9	78.0	82.3	72.4	66.1	66.9	64.7
Government (property registry, transactions, projects)										
Very interested		19.5	19.1	20.1	18.2	17.1	19.9	25.0	27.5	20.6
Some interest		38.5	40.6	35.2	37.6	40.5	33.3	42.4	41.3	44.4
No interest		42.0	40.3	44.7	44.2	42.5	46.7	32.6	31.2	34.9
	Total (%)	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**
Number of users considered in these calculations *		935	566	369	763	457	306	172	109	63
Users considered as a % of those that search for info. in the Web		72.9	75.8	68.8	75.6	79.5	70.5	62.8	63.4	61.8
Commercial transactions (easy payment, import, export, banking)										
Very interested		15.0	15.1	14.9	14.2	14.2	14.2	18.9	19.2	18.3
Some interest		34.4	35.1	33.1	32.4	33.0	31.5	43.3	44.2	41.7
No interest		50.6	49.7	51.9	53.4	52.8	54.3	37.8	36.5	40.0
	Total (%)	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**
Number of users considered in these calculations *		917	555	362	753	451	302	164	104	60
Users considered as a % of those that search for info. in the Web		71.5	74.3	67.5	74.6	78.4	69.6	59.9	60.5	58.8
Buy and sell (virtual markets, auctions, product advertising, contacts)										
Very interested		18.8	19.0	18.4	17.2	16.7	18.1	25.4	28.6	20.0
Some interest		32.9	35.0	29.5	32.8	34.4	30.3	33.3	37.5	26.2
No interest		48.3	46.0	52.0	50.0	48.9	51.6	41.2	33.9	53.8
	Total (%)	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**
Number of users considered in these calculations *		937	568	369	760	456	304	177	112	65
Users considered as a % of those that search for info. in the Web		73.0	76.0	68.8	75.3	79.3	70.0	64.6	65.1	63.7

* Excludes users that answered incorrectly or did not give an indication of degree of interest in this type of content.

Note: These tabulations exclude transients and children aged 14 and less.

Annex B

Cabina User Survey Questionnaire

Cuestionario de usuarios de cabinas públicas

Objetivos del cuestionario y orientaciones generales

Este cuestionario forma parte de un estudio realizado conjuntamente por el Banco Interamericano de Desarrollo (BID), la Organización de las Naciones Unidas para la Agricultura y la Alimentación (FAO), y la Unión Internacional de Telecomunicaciones (UIT). En Perú, la principal institución cooperante es la Red Científica Peruana.

Se trata de un esfuerzo por identificar formas viables de aumentar el acceso a tecnologías modernas de información y telecomunicaciones, con miras a fomentar un mayor uso productivo de esas tecnologías en América Latina y el Caribe.

Los objetivos del cuestionario son los siguientes: i) identificar características básicas de los usuarios de las cabinas; ii) identificar las necesidades de los usuarios, iii) identificar los principales usos que le dan los usuarios a las cabinas, y iv) determinar cual es la calidad del servicio, y posibles formas de mejorarlo.

La información suministrada no tendrá uso comercial y la misma recibirá un tratamiento estrictamente anónimo y confidencial.

Las instituciones interesadas agradecen el aporte de tiempo del usuario en llenar este cuestionario, así como la colaboración de los administradores de cabina en facilitar la administración del cuestionario.

Orientaciones para el administrador del cuestionario

El presente cuestionario ha sido previsto para ser completado por todos los usuarios de la Cabina Pública durante un período de 2 semanas completas: del miercoles 01 de marzo al martes 14 de marzo de 2000.

Cada vez que un cuestionario sea completado, este debe ser colocado en un buzón o sobre anónimo, que no permita la identificación del usuario

En todo caso se agradece mantener un control de los usuarios que ya hayan completado el cuestionario, a fin de evitar duplicaciones**.**

Al final de las 2 semanas, la totalidad de los cuestionarios deben ser enviados al Director del Instituto de Informática de la Universidad Nacional de San Agustín, Calle Francisco Velasco 125, Parque Industrial, Arequipa.

El estudio incluirá un análisis por cabina participante en el estudio, que le permitirá a los administradores obtener un perfil detallado de sus clientes y de sus aspiraciones y objetivos

Preguntas a ser completadas por el administrador del cuestionario

Nombre de la cabina pública: _____

Ubicación: _____

Preguntas preliminares para el usuario:

I-1 ¿Cuantos locales de cabina pública utiliza con frecuencia? _____

I-2 Si usted está de paso en esta ciudad y solo utiliza este local temporalmente, por favor coloque una X en la siguiente casilla: **[ ]**

Si desea conocer los resultados del estudio una vez terminado, usted puede, opcionalmente, suministrar su dirección electrónica (en la página 5, pregunta 28) **donde se le pueda contactar.**.

Cuestionario de usuarios de cabinas públicas

1 Sexo [ ]
(M - Masculino; F - Femenino)

2 Edad [ ]
(indique el número de años cumplidos)

3 Estado civil: (coloque solo una X, en la casilla correspondiente)

Casado(a)	[ ]	Divorciado(a)/Separado(a)	[ ]	Soltero(a)	[ ]	Conviviente	[ ]

4 Número de personas que viven en la misma familia-residencia que usted: [ ]

5 Posición suya (en relación al Jefe/Jefa de familia) **en la estructura familiar de la residencia donde vive:**
(coloque solo una X, en la casilla correspondiente)

Jefe/Jefa de familia	[ ]	Nieto/nieta	[ ]	Cuñado o cuñada	[ ]	Otra relación de parentesco	[ ]
Cónyugue	[ ]	Padre/madre	[ ]	Suegro/Suegra	[ ]	Amigo-huesped residente:	[ ]
Hijo/hija	[ ]	Yerno/nuera	[ ]	Hermano/Hermana	[ ]	Empleado en la residencia	[ ]

6 Ocupación (marque con una X todas las situaciones que apliquen):

estudiante	[ ]	profesional (médico, abogado, ingeniero, etc.)	[ ]
trabajador(a) asalariado(a)	[ ]	trabajador medio tiempo/temporal (<5 horas/dia ó < 9 meses/año)	[ ]
agricultor(a)	[ ]	pensionado(a)	[ ]
maestro o maestra	[ ]	desocupado(a) buscando trabajo	[ ]
empleado(a) en admin. pública	[ ]	se ocupa de quehaceres de su casa	[ ]
comerciante/negocio propio:	[ ]	trabaja en quehaceres domésticos (para otros)	[ ]

7 Nivel mas alto de Escolaridad Alcanzado
(marque solo una casilla, la que mejor se aproxime)

Ninguno (pre-primaria)	[ ]
Primaria	[ ]
Secundaria	[ ]
Estudios técnicos	[ ]
Egresado Univ./Bachiller	[ ]
Titulo Profesional	[ ]
Magister	[ ]
Doctorado	[ ]

8 Idiomas (marque todas las casillas que apliquen)

	Lengua Materna	Habla	Lee	Escribe
Español	[ ]	[ ]	[ ]	[ ]
Quechua	[ ]	[ ]	[ ]	[ ]
Aymará	[ ]	[ ]	[ ]	[ ]
Inglés	[ ]	[ ]	[ ]	[ ]
Otro	[ ]	[ ]	[ ]	[ ]

9 Ingreso mensual familiar
(marque solo una casilla, la que mejor se aproxime)

menos de S/. 100	[ ]
entre S/. 101 y 250	[ ]
entre S/. 251 y 500	[ ]
entre S/. 501 y 1.000	[ ]
entre S/. 1.001 y 2.000	[ ]
entre S/. 2.001 y 5.000	[ ]
entre S/. 5.001 y 10.000	[ ]
más de S/. 10.000	[ ]

10 ¿Cual es el aporte que usted hace al ingreso familiar?
(marque solo una casilla, la que mejor se aproxime)

no hace aporte	[ ]
menos de 20%	[ ]
20% a 40%	[ ]
40% a 60%	[ ]
60% a 80%	[ ]
80% a 100%	[ ]

Cuestionario de usuarios de cabinas públicas

11 ¿Como supo de la cabina pública? (seleccione solo una razón, la que mas se aproxime)

información de parientes y amigos:	[ ]	por anuncios o avisos en:	
pasó de cerca y le interesó:	[ ]	periódicos o revistas	[ ]
indicación de colegas de trabajo:	[ ]	Internet	[ ]
indicación de maestros:	[ ]	radio	[ ]
sugerencia de un funcionario público:	[ ]	televisión	[ ]
sugerencia de Organismo no gubernamental	[ ]	afiches o boletines públicos	[ ]

estuvo buscando por cuenta propia un lugar similar hasta que encontró este: [ ]

Otras formas (favor especificar): _____

12 ¿Que distancia tiene que recorrer para llegar a este local? (marque solo una casilla)

< de 1 kilómetro [ ] de 1 a 5 km. [ ] de 5 a 10 km. [ ] más de 10 km [ ]

13 ¿Con que frecuencia utiliza usted los servicios de cabina pública? (marque solo una casilla)

4 ó más dias de la semana	[ ]	1 vez por semana	[ ]	3 ó 4 veces al año	[ ]
2 a 3 dias de la semana	[ ]	1 a 3 veces por mes	[ ]	menos de 2 veces/año	[ ]

14 ¿Cuanto tiempo pasa en este local utilizando los servicios durante una visita típica? (marque solo una casilla)

menos de una hora:	[ ]	de 1 a 2 horas:	[ ]	de 2 a 4 horas:	[ ]
de 4 a 6 horas:	[ ]	de 6 a 8 horas:	[ ]	más de 8 horas:	[ ]

15 ¿Para que propósitos utiliza usted los servicios de la cabina?	**Uso Principal** (elija solo una casilla)	**Uso Secundario** (puede marcar más de una casilla)
hacer tarea, trabajos escolares o universitarios:	[ ]	[ ]
mantener contacto con familiares y amigos por Internet o teléfono:	[ ]	[ ]
hacer trabajos relacionados con mi empleo:	[ ]	[ ]
asuntos relacionados con mi negocio propio:	[ ]	[ ]
desarrollar trabajos literarios o artísticos:	[ ]	[ ]
asuntos con el gobierno: obtener información o realizar trámites:	[ ]	[ ]
trámites bancarios:	[ ]	[ ]
buscar trabajo:	[ ]	[ ]
comprar o identificar nuevos productos via Internet:	[ ]	[ ]
aprender computación y uso del Internet:	[ ]	[ ]
aprendizaje comercial (gerencia, secretariado, contabilidad, etc.):	[ ]	[ ]
aprendizaje académico (matemáticas, idiomas, etc.):	[ ]	[ ]
Recreación - entretenimiento - socializar:	[ ]	[ ]
Otros usos (favor especificar): _____	[ ]	[ ]

16 ¿Tiene usted computadora en casa? (marque solo una casilla) Si [ ] No [ ]

17 ¿Tiene usted conexión a Internet en casa? (marque solo una casilla) Si [ ] No [ ]

Cuestionario de usuarios de cabinas públicas

18 ¿Cuales de los siguientes equipos y servicios de la cabina utiliza usted?

(para cada equipo o servicio marque una sola casilla)	**Frecuentemente** (al menos una de cada dos veces que acude a la cabina)	**Ocasionalmente** (de vez en cuando)	**No usa el servicio**	**Servicio no disponible en esta cabina**
Uso de Equipo:				
A Teléfono	[ ]	[ ]	[ ]	[ ]
B Fax	[ ]	[ ]	[ ]	[ ]
C Fotocopiadora	[ ]	[ ]	[ ]	[ ]
D Computadora	[ ]	[ ]	[ ]	[ ]
E Impresora (de computadora)	[ ]	[ ]	[ ]	[ ]
F *Scanner*	[ ]	[ ]	[ ]	[ ]
G Cámara de video	[ ]	[ ]	[ ]	[ ]
H Alquiler de equipos	[ ]	[ ]	[ ]	[ ]
Uso de computadora y/o Internet				
I Diseño de páginas en la Red - por el propio usuario	[ ]	[ ]	[ ]	[ ]
J Aplicaciones y software (Office, Corel, Juegos, etc.)	[ ]	[ ]	[ ]	[ ]
K Correo electrónico	[ ]	[ ]	[ ]	[ ]
L Búsqueda de información en la Red (WWW)	[ ]	[ ]	[ ]	[ ]
M Telefonía por computadora (via Internet)	[ ]	[ ]	[ ]	[ ]
N Juegos en Internet	[ ]	[ ]	[ ]	[ ]
O Chat	[ ]	[ ]	[ ]	[ ]
P Aprendizaje por cuenta propia usando Internet	[ ]	[ ]	[ ]	[ ]
Cursos auspiciados por la cabina				
Q Cursos sobre computación, Internet, o programas (Word, Excel, Access, diseño de páginas en Red, etc.)	[ ]	[ ]	[ ]	[ ]
R Clases de carácter comercial (secretariado, (administración de empresas, contabilidad, etc.)	[ ]	[ ]	[ ]	[ ]
S Clases de carácter académico (matemáticas, Inglés, gramática, ciencias, etc.)	[ ]	[ ]	[ ]	[ ]
Servicios provistos por la cabina				
T Mecanografiado, traducción, producción de documentos	[ ]	[ ]	[ ]	[ ]
U Videoconferencia	[ ]	[ ]	[ ]	[ ]
V Diseño/páginas en Red - por la cabina	[ ]	[ ]	[ ]	[ ]
Otros servicios (favor especificar)				
W No. 1 _____	[ ]	[ ]	[ ]	[ ]
X No. 2 _____	[ ]	[ ]	[ ]	[ ]

19 Ordene según la importancia o prioridad para usted, los equipos disponibles en la cabina pública.

Coloque en cada una de las casillas siguientes una de las letras que identifica cada uno de los siguientes equipos:

A = teléfono; B = fax; C = fotocopiadora; D = computadora; E = impresora; F = *scanner;*
G = cámara de video; H = alquiler de equipos;

Primera prioridad: [ ] Segunda prioridad: [ ] Tercera prioridad: [ ]

20 Ordene según la importancia o prioridad para usted, los servicios disponibles o provistos en la cabina.

Coloque en cada una de las casillas siguientes una de las letras que identifica cada uno de los siguientes servicios:

I = diseño páginas en Red por cuenta propia; J = uso de software; K = diseñar página de otros;
L = correo electrónico; M = búsqueda inf. via Internet; N = Telefonía via Internet; O = Juegos en Internet;
P = Chat; Q = autodidacta usando Red; R = cursos computación/Red; S = cursos de comercio;
T = clases académicas; U = mecanografía, etc. V = Videoconferencia; W = diseño página y mantenimiento en Red;
X = otros No. 1; Y = otros No. 2

Primera prioridad: [ ] Segunda prioridad: [ ] Tercera prioridad: [ ]

Cuestionario de usuarios de cabinas públicas

21 A continuación se presenta una lista de posibles motivos para usar la cabina. Para cada una de las posibilidades siguientes, favor indicar si es un motivo suyo.
Si se trata de un motivo suyo, favor indicar la medida en que ha alcanzado sus metas en relacion a ese motivo, como consecuencia de usar los servicios de cabina.

	¿Es un objetivo suyo? (coloque solo una X indicando Si o No.)		**¿Cuanto ha avanzado en alcanzar sus metas en relación a este objetivo?** (para cada objetivo suyo, marque con una X solo una de estas 4 casillas)			
	[Si]	**[No]**	**[nada]**	**[un poco]**	**[**muy cerca de lograr**]**	**[** meta ha sido alcanzada **]**
mejorar en la escuela o los estudios	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
mejorar habilidades relacionadas al trabajo	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
hacer mi trabajo lejos de la sede de mi empleador (teletrabajo)	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
encontrar trabajo	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
capacitarme para obtener un mejor trabajo	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
tener mayor confianza en mi mismo	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
mejorar habilidades en uso de computadoras	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
sobreponerme a la ansiedad o temor al uso de computadoras	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
aumentar ganancias de mi finca o negocio (identificar nuevos mercados, mejorar contacto con clientes y proveedores, etc.)	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
hacer compras personales a mejor precio, mejor calidad o más oportunamente	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
ahorrar tiempo en trámites personales (por ejemplo, bancarios o con el gobierno)	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
mantenerme mejor informado (noticias financieras o mundiales)	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
realizar un trabajo literario o artístico (por ejemplo, escribir un libro)	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
encontrar pareja, hacer nuevas o mantener amistades via correo electrónico-Internet	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
entretenimiento (juegos en computadora socializar en la cabina, pasatiempo)	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
otros objetivos (favor especificar):						
Ob. Extra No.1: _____ _____	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
Ob. Extra No.2: _____ _____	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]

22 ¿Como considera usted que ha cambiado su habilidad para utilizar computadoras y los medios modernos de comunicación, como resultado de visitar la cabina pública? (marque solo una casilla, la que mejor se aproxime)

gran avance **[ ]** alguna mejora **[ ]** no ha cambiado mucho **[ ]** peor que antes **[ ]**

23 ¿Cuanto tiempo hace que está usando esta cabina? (marque solo una casilla, la que mejor se aproxime)

esta es la 1a vez **[ ]** menos de 6 meses **[ ]** de 6 meses a un año **[ ]** más de un año: **[ ]**

Cuestionario de usuarios de cabinas públicas

24 A continuación se enumeran una serie de aspectos relacionados con la calidad del servicio que ofrece la cabina. Favor indicar si usted considera el aspecto o servicio, Excelente, Bueno, Satisfactorio o Pobre.

(Colocar solo una X para cada aspecto o servicio.)

	Excelente	Bueno	Satisfactorio	Pobre
Atmósfera cómoda, agradable (comodidad, buena luz, etc.)	[ ]	[ ]	[ ]	[ ]
Equipos (capacidad, velocidad, mantenimiento.)	[ ]	[ ]	[ ]	[ ]
Conexión Internet (estabilidad, continuidad.)	[ ]	[ ]	[ ]	[ ]
Costo de los servicios de cabina	[ ]	[ ]	[ ]	[ ]
Disponibilidad de software de su interés	[ ]	[ ]	[ ]	[ ]
Capacidad técnica del personal (para resolver problemas, para asesorar.)	[ ]	[ ]	[ ]	[ ]
Disposición del personal (amabilidad, deseos de ayudar.)	[ ]	[ ]	[ ]	[ ]
Horario de atención al público (Grado en que se adecua a sus necesidades.)	[ ]	[ ]	[ ]	[ ]
Cursos y capacitación (Grado en que se adecua a sus necesidades.)	[ ]	[ ]	[ ]	[ ]

25 ¿Que modificaciones introduciría usted en esta Cabina para mejorar el servicio?
(para mayor legibilidad, escriba con letra mayúscula)

.....

.....

26 ¿Busca información en la Red de Internet? Si [ ] No [ ]
(Si la respuesta es No, pase directamente a la pregunta 28 sin contestar la 27)

27 Hay diferentes "tipos de contenido" posibles en Internet. Indique a continuación si se trata de contenidos de Mucho, Algún o Ningún interés para usted.

(marque una sola casilla para cada tipo de contenido)	Mucho interés	Algún interés	Ningún interés
Educación (a distancia, red de maestros, material educativo en linea)	[ ]	[ ]	[ ]
Salud (consultas, medicamentos, enfermedades, remedios, médicos)	[ ]	[ ]	[ ]
Investigación académica en diferentes disciplinas	[ ]	[ ]	[ ]
Información técnica (prácticas agrícolas, métodos de producción industrial)	[ ]	[ ]	[ ]
Bolsas de trabajo (colocación/inspección curriculums, info. mercados de trabajo)	[ ]	[ ]	[ ]
Artísticos (museos, eventos, exhibiciones en linea, listas de artistas)	[ ]	[ ]	[ ]
Recreativos (juegos, cine, música)	[ ]	[ ]	[ ]
Seguridad ciudadana en situaciones de emergencia (terremotos, huracanes, etc.)	[ ]	[ ]	[ ]
Información turística (hotel, pasajes, alquiler de autos)	[ ]	[ ]	[ ]
Gobierno (registro de propiedad, trámites, proyectos)	[ ]	[ ]	[ ]
Trámite comercial (pago fácil, importación, exportación, banca)	[ ]	[ ]	[ ]
Compra y venta (mercados virtuales, subastas, anuncios de productos, contactos)	[ ]	[ ]	[ ]
Otros (especificar) _____	[ ]	[ ]	[ ]

28 Opcional

(Si usted lo desea, puede suministrar su dirección electrónica a continuación. Esta será utilizada excepcionalmente, en caso que sea necesario hacer alguna aclaración. También nos permitirá informarle, una vez terminado el estudio, donde puede usted consultar los resultados del mismo en la Red. En todo caso, su dirección no será divulgada ni utilizada para usos comerciales).

Dirección electrónica: _____