

Research Article

The Impact of the Internet on Local Social Equity: A Study of a Telecenter in Aguablanca, Colombia

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Abstract

This case study of a telecenter in Cali, Colombia examines the impacts of Internet access and use on local social equity. It proceeds with a livelihoods analysis of the neighborhoods surrounding the telecenter combined with an analysis of how telecenter users and other local residents are using the Internet and other ICTs. The study found that the telecenter was not improving local social equity through its services: its users were demographically similar to other Internet users and used the Internet primarily to further their formal employment options. Implications for the broader telecenter and ICT for development literature are discussed.

Introduction

The research presented here uses a case study of one telecenter, located in the District of Aguablanca, in Cali, Colombia to examine existing and potential impacts of the Internet on social equity locally. This telecenter was one of three implemented through InforCauca, a 3-year pilot project initiated in 2000 by the International Centre for Tropical Agriculture (CIAT) and the Corporación Universitaria Autónoma de Occidente (CUAO). The purpose of InforCauca was to test “the hypothesis that the democratization of information and communications can foster sustainable development” (CIAT, 1999). This hypothesis succinctly states the main rationale for publicly funded telecenters around the world.

Globally, telecenters have become an accepted model for creating greater and more equitable access to information and communication technologies (ICTs), with the understanding that such access will in turn lead to development. The focus on equity of access and resultant benefit is how “democratization of information and communications” is interpreted in this paper. For example, the International Telecommunications Unit (ITU) of the United Nations recognized telecenters as one of the most promising models of achieving global universal access to ICTs (Benjamin, 2000). Yet such promise can only be reached if telecenters are themselves equitable and accessible, characteristics that cannot be assumed.

The purpose of this research was to examine not just the equity of access to a telecenter, but also the implications of telecenter use for local livelihood strategies across the economic strata, since the main drive of the telecenter was to contribute to local development by enhancing their livelihood options.

The specific research objectives were as follows:

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1. To identify and explain discrepancies between anticipated and actual uses of the telecenter;
2. To identify which demographic groups were not using the telecenter and why;
3. To determine and describe livelihood strategies that appeared to be supported by identified Internet uses at the telecenter and which demographic groups were employing these strategies.

The research achieved its objectives through a primarily qualitative analysis based on semi-structured interviews with various telecenter users and other local residents, capturing both usage data and information about their livelihood activities.

Telecenters as Tools for Local Development

Telecenters are expected to contribute to development by providing access. To understand the reasoning behind such expectations, we must first examine the literature to consider what access is, determine why such access is deemed important enough to warrant public policy and funding to achieve it, and finally assess what telecenters are and how they are specifically expected to contribute to greater access, and through this, to development. The analysis in this paper is based on Amartya Sen's (1999) definition of development as a process of increasing individual freedoms, which are an individual's range and quality of choices. Equity is an important component of this, insofar as one person's freedom should not impinge on or limit another's.

What Is Access and Why Should It Be a Public Concern?

Access is the concept that a person should be able to avail oneself of some basic good or service should he or she choose. *Universal access* expands this concept to include all members of a population. In the case of ICTs, the specific goals of universal access are usually defined in government policy, and these usually focus on physical access: for example, all members of a population within reasonable walking distance of services (Parkinson, 2005a).

The notion that all people should have access to ICTs, and that such access must be assured through public policy, is tied to the idea that ideal, democratic societies should have a degree of economic equality if they are to achieve political equity and so-

cial justice, and that the "natural" diffusion of ICTs through society may in fact further these inequalities (Thurlow, 1995; Gómez & Martínez, 2001). Manuel Castells' critical work, *The Information Society* (1996, 1997, 1998), is one of the most widely recognized and influential in arguing on the far-reaching effects of this change. He warns that information technologies are having a profound transformative effect upon society and polarizing the population into the "information haves" and the "information have-nots," the latter group being essentially excluded and devalued from this new world order. This view is not technologically deterministic; rather, Castells attributes the cause of this division to capitalism, especially in its current neoliberal incarnation (Castells, 1999).

One important pattern of the emerging social exclusion is based upon the impact that information technologies have on space, allowing for easy flow of valued spaces and bypassing of devalued spaces. Another aspect is the upgrading of skills required for most jobs in the market (Castells, 1999). Without a concerted effort at reversing the trends, the information revolution is likely to increase and sustain a significant underclass. This is a societal problem for both moral and pragmatic reasons, as "it cannot be seriously argued that a democratic society can live peacefully on the basis of the systemic exclusion of one-quarter to one-third of its people" (Castells, 1999, 34).

The urgency of Castells' argument is based upon the claim that information technologies, especially the Internet and computers, are transforming society in a profound and fundamental way. An alternative argument is that the change brought by information technologies is evolutionary—the latest in a continuum of information and communication technologies linking back to postal and telegram services. From this perspective, the focus on technology as the prime culprit or at least the prime mediator of our current social ills can sidetrack us from the real issues and causes (Hall, 1999).

Many other critics argue that the digital divide, as it has been understood and defined when implemented in policy, is overly simplistic in its understanding of what access entails, an argument that has been previously applied to other technologies (Light, 2001). Competent, empowering use of computers and the Internet implies much more than simple physical access. Lack of affordability, relevant

content, and diversity of access opportunities are other forms of access barriers (Reddick, 2000). Literacy, technical literacy, and attitudinal factors are all key to the successful use of new information and communication technologies. Broader factors, such as policy, infrastructure, and cultural norms, will also influence the availability of the technology and the ability of people to use it in ways that serve them. To take this multitude of factors into account, Clement and Shade (2000) suggest envisioning access as a kind of rainbow, where broad-reaching factors such as policy make the lower rings. Van Dijk (2001) suggests a more individually focused model of access that emphasizes that access and use are dynamic and cyclical. Awareness of a technology is followed by physical and financial access, followed by skills development, followed by productive use. All of this cycle will begin again when a new, possibly related technology is introduced, and the process could get blocked at any point. Bridges.org (2004) also suggests a definition of "real access" which operates as a kind of checklist: for access to be complete, it must meet all of the criteria, which relate to various policy, technical, financial, social, and cultural factors.

What Are Telecenters and How Are They to Contribute to Access and Development?

Telecenters are public places where community members can access a variety of ICTs and related services. By the turn of the millennium, they had gained favor with international development agencies as a means of providing universal access in places where universal household ownership of a computer and telephone line is clearly unrealistic (Fuchs, 1997; IDRC, 1999; Proenza, Bastidas-Buch, & Montero, 2001). Proponents of telecenters argue they are vitally necessary if the poor and marginalized are not to be "left behind," or more moderately, that they offer a benign way to introduce ICTs, which maximizes the opportunities they present to communities while minimizing threats (UNDP, 2001; Gómez & Martínez, 2001).

Telecenters are often distinguished from cybercafés, because cybercafés are run primarily as businesses, and telecenters usually receive some amount of public funding, at least during start-up, and have some explicit goal or vision related to development, usually at a community level (Delgadillo, Gómez, & Stoll, 2002). However, there is some controversy in

the literature over the degree to which telecenters should be treated as public services versus businesses, with some argument that they may in fact be more responsive to local publics if they operate as the latter (Benjamin, 2000; Fuchs, 1997). Because they are usually expected to be self-sustaining—that is, public financing tends to be short-term and related to start-up and occasional capital expenditures, most telecenters in developing countries must charge user fees. Telecenters can be stand-alone or incorporated into an existing organization, such as a school, community center, or NGO (Parkinson, 2005a).

Telecenters provide access to ICTs by providing the physical space and equipment, a supportive staff that often aims to be welcoming to all, regardless of experience, and by frequently subsidizing the full costs of service provision, thus reducing the financial barriers faced by potential users. They usually try to take access further by developing information-based services that respond to the needs of the community (Fuchs, 1997). They usually face technical, skills and resource limitations that constrain their capacities to fully meet their goals.

Benjamin (2000) describes the causal chain by which telecenters can be theorized to have a positive impact on development as a rather long and tenuous one looking something like this:

telecenters ⇒ access to ICTs ⇒
provide services ⇒ assist development

The research presented in this paper was concerned with examining the end of the chain: the final development outcomes of the telecenter, especially as they relate to social equity. Impacts at this end are dependent upon the links in the chain that come before, and breakdowns early in the chain will affect outcomes. For that reason, the research also had to encompass the functioning of the telecenter, who was accessing it, and what services they were using. The following section describes the conceptual framework the research used to achieve this.

Conceptual Framework

The conceptual framework is composed of two compatible theoretical perspectives: the knowledge information systems perspective and the sustainable livelihoods (SL) framework. The first was applied for understanding the functioning of the telecenter in context, and the second for analyzing how Internet

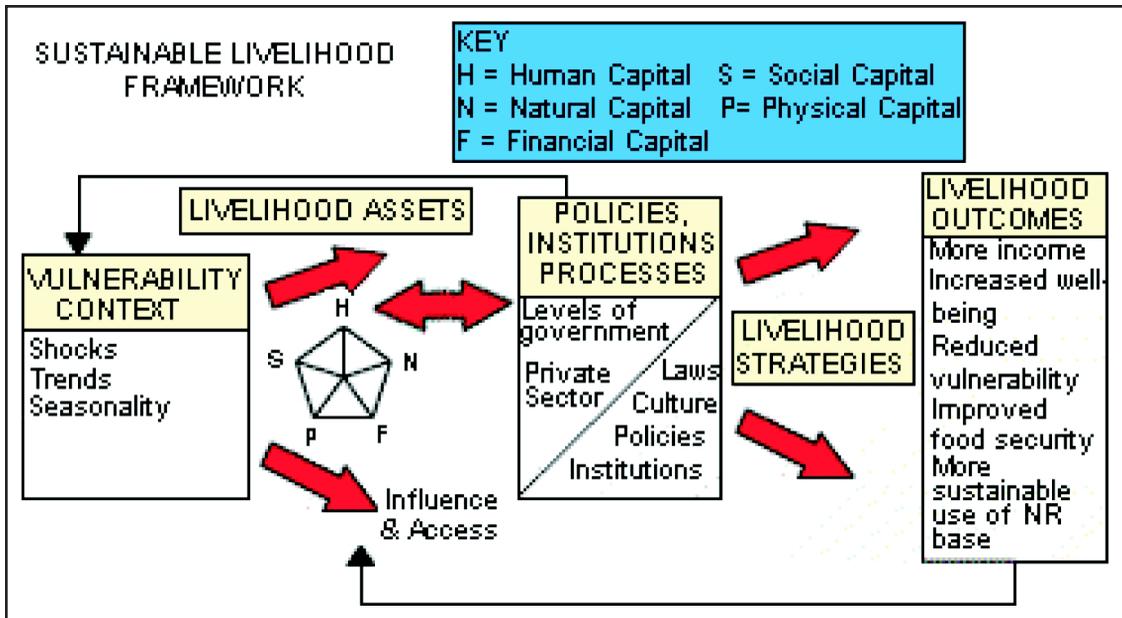


Figure 1. Sustainable livelihood framework (DFID, 2001).

use through the telecenter impacted equity. Both flow naturally from Sen’s (1999) definition of development as individual freedom. The SL framework especially focuses on the relationship between the individual and the broader context in which she or he operates, and, based on this, on the range of resources and choices available to him or her.

The knowledge and information systems (KIS) perspective was developed by extension researchers (Engels, 1997). KIS focuses on understanding interactions and processes of exchange and organization between social actors. This understanding is based upon an assumption that knowledge occurs through a socially constructed process (Engels, 1997). Understanding the varying perspectives between social actors and the interactions between them is therefore necessary to understanding any social system. The conceptual framework incorporates this approach in seeking primarily to understand and describe how different actors and perspectives have fused to create the telecenter as both an idea and a physical location.

The sustainable livelihoods framework, presented in diagrammatic form in Figure 1, brings together the insights of many preexisting development theories. Intended beneficiaries of development projects are actors in their own development, and particu-

larly in choosing how best to pursue their own ways of making a living. They make such choices, as we all do, based on the resources and entitlements available to them, including human, social, natural and physical capital, to form adaptive strategies in pursuing livelihoods (Helmore & Singh, 2001). A telecenter can therefore be conceptualized as an additional tool or resource that is designed to be placed at the hands of its intended beneficiaries, and which will contribute to development inasmuch as such individuals are able to utilize it in such a way that it enhances either the range or quality of their livelihood options, resulting in increased well-being. The concept of “access” this framework is multiple: it implies both that an actor has the resources and awareness to be able to use the telecenter, and that they see that they are able to apply it to their existing livelihood strategies.

In this research, the sustainable livelihoods framework provides a window to focus attention and structure information about the community context, and the role of the telecenter within it. The research focuses not just on identifying who is using the telecenter, but also on how their use contributes to their livelihood strategies, and thus how it is likely to benefit them from a developmental perspective. One limitation of such an approach is that it runs

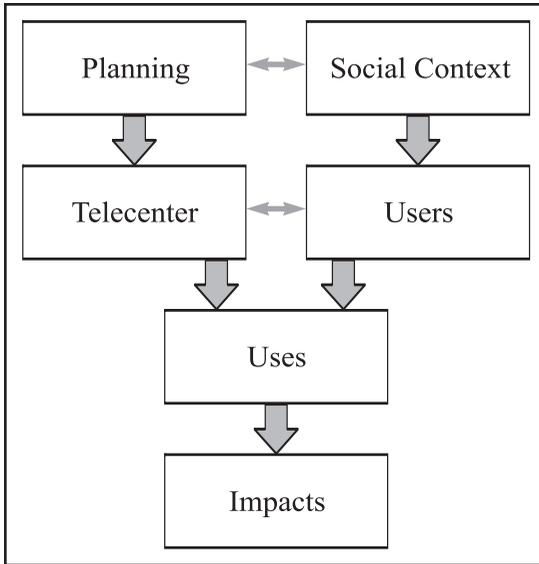


Figure 2. Main components of the research area.

the risk of overlooking other types of benefits arising from telecenter use, for example in the social and cultural realms. Nonetheless, the most common justification for funding telecenters is that they can contribute to the economic well-being of their intended beneficiaries by increasing their livelihood options, and that conversely, those who are denied access to modern ICTs are likely to become economically marginalized.

Methodology

Case Study

Primary research consisted of an impact assessment conducted through a case study of the Aguablanca telecenter and its surrounding population in Cali, Colombia from June to August 2002. Case study research on the Aguablanca telecenter provided specific insights relevant to the Aguablanca telecenter as well as contributions to our broader understanding of telecenters as development interventions and the impact of the Internet, accessed through telecenters, on social equity. As Palys (1997) explains, the rigor of the analysis employed in case study research is enforced by the very complexity that makes such cases not amenable to more reductionist techniques. Any analytic explanation of the research must be capable of accounting for all of the data generated within the case. The use of

multiple methods to triangulate research findings within the case will help to ensure that it is rigorous and the resulting explanation is valid.

Four Stages

The specific elements and relationships that were considered in the case were conceptualized as shown in Figure 2. The research itself then consisted of the following four major stages (the design of each stage was informed in part by the initial findings from the previous stage):

Stage 1: Understanding the objectives and operation of the telecenter, mainly from the perspectives of those who have played an active role in establishing and maintaining it.

Stage 2: Understanding the way the telecenter is currently used, mainly from the perspectives of the users.

Stage 3: Understanding the current and potential links between the telecenter and its social surroundings from the perspective of individuals and organizations living near the telecenter.

Stage 4: Discussing and sharing research findings with stakeholders to socialize the results.

Following are specific activities associated with each stage of the research:

Stage 1

- Project document review
- Key informant interviews with CIAT, Carvajal, CUAO, and telecenter staff

Stage 2

- Observation of telecenter
- Telephone survey of 100 randomly selected telecenter users
- Interviews with 28 selected telecenter users (selected to represent a broad range of users in terms of age, employment status, and gender)
- Analysis of user entry statistics and telecenter income

Stage 3

- Review of documentation on Aguablanca's community activities
- Comparison with two other local Internet access sites (both privately owned)

- Survey of 102 households from 4 surrounding neighborhoods
- Short interviews with 10 local organizations and representatives of other Carvajal programs
- Observational visits and staff interviews at local Internet cafés

Stage 4

- Ongoing consultation with all parties throughout the research process
- Initial results meeting with InforCauca staff
- A visioning/planning exercise with key stakeholders

While the Stage 4 activities are not traditionally considered research activities, they are included here because they generated further insights that contributed to the overall analysis. The household survey was not formally random, although it approximated a random sample. Surveyors randomly approached people in households from four selected neighborhoods near the telecenter. All statistics generated from the two surveys were used for descriptive purposes and were not subjected to any statistical tests.

Findings

To understand the impact of a telecenter on local social equity, we must understand the context in which it operates, who is benefiting from it, and how. This section starts off with a description of the research context: both the district of Aguablanca where the telecenter was located and the telecenter itself. Secondly, it examines overall livelihood strategies employed in Aguablanca. Thirdly, the demographics (e.g., age, sex, employment status) of telecenter users are compared with those who do not use the telecenter. Likewise, further comparisons are drawn between those who use the Internet at the telecenter, those who use other services at the telecenter, those who use the Internet elsewhere, those who use computers elsewhere, and those who do not use these anywhere. The rationale for these comparisons is to understand how Internet users at the telecenter differ from those in all the other categories. This rationale leads to a final analysis of how ICT use at the telecenter is contributing to local livelihood strategies, particularly among certain demographic groups.

Description of the Research Context

Aguablanca

The city of Cali is the third largest in Colombia, located in the southwest of the country. Cali's 2000 population was estimated at 2.3 million people (DAP, 2000). Aguablanca is a large district within Cali, the official population of which stood at 567,000 at the time of field research, although a constant influx of people has raised the number substantially.

Aguablanca is an economically poor and politically marginalized area that has received minimal government support. Creating roads, housing, and any shared public goods has been a collective community effort, eventually aided by the presence of NGOs such as Fundación Carvajal. Unemployment, which stood at about 21% in Cali in 1999, was officially registered at 26% within Aguablanca during the same census period (DAP, 2000). In urban Colombia generally, more than 60% of the working population is estimated to be employed in the informal sector, and in a region such as Aguablanca, where even more individuals are cut off from investment and highly stigmatized, we would expect this figure to be higher. Aguablanca is infamous for its gang violence and lawlessness, a reputation that is maintained through media representations that focus almost exclusively on this aspect of the district's life.

Residents of Aguablanca face a variety of context-specific vulnerability factors that affect their current and future well-being. This research classified these factors by economic, social, human, natural, physical, and political characteristics. These vulnerabilities, summarized in Table 1, pose a challenge to all of Aguablanca's residents, but especially to those without the skills and assets to develop effective coping strategies.

The Telecenter

The Aguablanca telecenter was established as part of the 3-year Infocauca pilot project managed by CIAT and CUAO. They established three telecenters within organizations that already were active in the areas. However, in the case of Aguablanca, the organization first selected to host the telecenter proved unsuitable. CIAT and CUAO relocated the telecenter to a community center run by Fundación Carvajal. This center, also designed to be self-financing, offered community health services, a

Table 1 *The Vulnerability Context in Aguablanca, Colombia*

Vulnerability	Key Characteristics
economic	<ul style="list-style-type: none"> • high unemployment, high competition for clients, lack of investment, lack of employment security
environmental	<ul style="list-style-type: none"> • dust, sewage, flooding, disease-carrying insects, poor management of natural resources
human	<ul style="list-style-type: none"> • high health risks (posed by environmental factors and violence) coupled with inadequate health care services • low levels of formal education coupled with increasing value of education in formal employment sector, lack of access to education: inadequate numbers of public schools, private schools are expensive and poorly regulated
social (internal)	<ul style="list-style-type: none"> • violence
social (external)	<ul style="list-style-type: none"> • social stigma and prejudice
physical	<ul style="list-style-type: none"> • high population density, poor land use planning and road infrastructure
political	<ul style="list-style-type: none"> • police violence, lack of legitimacy, lack of political voice, and poor access to political processes

bank, a notary public, a library, adult education, microfinance services, and Internet and computer rooms. By the time the telecenter reopened in October 2001 in its new location, it was already halfway through its 3-year funding period. The plan was that Carvajal would take immediate responsibility for the day-to-day running and management of the center and assume total responsibility for the financing and operation of the telecenter by the end of the project period. This short timeline gave it relatively little time to reestablish itself, and to succeed within its new home, it would have to eventually earn its keep.

Two staff sharing a full-time position ran the telecenter. Both were local women who were passionate about the development of their community. They had very limited computer and Internet experience, but were trained once they were hired. Experienced computer instructors who also worked at the community center would sometimes volunteer their support at the telecenter. The telecenter had a slow and frequently unusable Internet connection through a single dedicated telephone line, which was also shared with other computers in the community center.

The telecenter had five functioning computers with Internet connectivity, an ink-jet printer, and a scanner. Staff also provided transcription services. Public phone, courier, and photocopying services were also available within the same space. It was open to the general public and had an average of 161 users per month over its lifetime.

The telecenter's hours of operation were 8 A.M. to 12 P.M. and 2 P.M. to 5 P.M. on weekdays and from

8 A.M. to 12 P.M. on Saturdays. It generated sufficient income to cover only about half of its expenses, not accounting for equipment depreciation.

The InfoCauca team identified several specific objectives to achieve the telecenter's sustainable development. The ideas of what could be achieved changed over the course of the project. By the end of 2001, the objectives were as follows:

- Supporting local economic development;
- Increasing the "information culture" of Aguablanca and general access to the technology;
- Introducing an access point to the national government's employment database;
- Creating a business information service for local microenterprise and merchants; and
- Supporting the financial sustainability of the telecenter through diverse communication services such as fax, long-distance telephone, and airmail. (Russell, 2001; Paz, 2002)

Additionally, some members of InfoCauca wanted to create a Web portal that could give voice to local communities and organizations in Aguablanca and thus project a more positive image of the district to the world (Russell, 2001).

By summer of 2002, services had been diversified but had not resulted in financial sustainability, while relatively high competition and low usage put the objective's achievability into question. The business information service and employment database access point had not yet been established. General ac-

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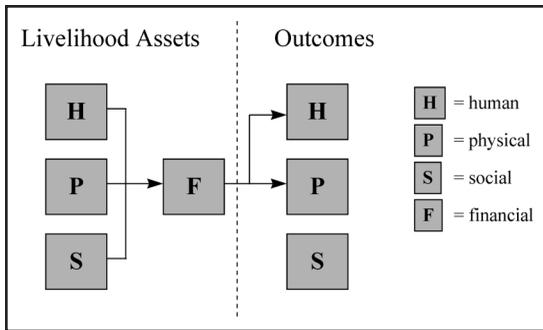


Figure 3. Relationship between livelihood assets and livelihood outcomes.

cess to the technology appeared, then, to be the objective on which most ground had been gained. However, this was challenged by some fairly frequent service interruptions, which lasted up to one month. The unreliable and limited Internet bandwidth meant the telecenter could not secure any types of users wishing for dependable prescheduled access, such as school groups or local NGOs. None of the three implementing partners were willing or able to invest in the improved Internet connection, which appeared key to strengthening both its utility and greater financial viability.

Soon after the telecenter opened, several new Internet cafés offering similar services at competitive rates opened in the surrounding areas. Some local households had also obtained computers, and sometimes an Internet connection, and often operated informal businesses allowing neighbors access

to their equipment, which also offset their own costs. This rapidly increasing competition undermined both the original goal of increased access and the financial prospects of the telecenter. Compared with its competition, its two main advantages appeared to be its location within the community center and the fairly strong user support provided by its staff.

Overall Livelihood Strategies in the Area

A livelihood analysis of individuals in Aguablanca used DFID’s (Department for International Development) sustainable livelihoods framework and was based on information gathered from the household survey, which was augmented by documentation on Aguablanca and observation.

Because life in Aguablanca depends mainly on a cash economy, livelihood strategies in Aguablanca, as shown in Figure 3, depend primarily on converting human, physical, and social assets to financial assets (money), which in turn can be converted into human and physical assets. Description of the types of assets likely to be drawn upon by people in Aguablanca is summarized in Table 2. Social assets, and especially networks of family and friends, are particularly important when finances are insufficient to cover other needs.

The analysis identified four main types of livelihood strategies that people in Aguablanca may employ, singularly or in combination:

1. Increase financial assets in the short-term: People can increase financial assets through income-generating activities: employment,

Table 2 *Livelihood Assets*

Asset	Description
Financial	Financial wealth varies within the district from people with literally nothing to proprietors of lucrative businesses. Most financial assets are gained through self-employment, informal employment, or remittance payments from out-migrant family members.
Natural	There are limited natural assets within the district and most are public or collective rather than private. The population density is high, land is dedicated entirely to human settlement, and most water sources are highly polluted.
Human	Health and education are the two key human assets in determining livelihood strategies, although informal skills and experience are also important.
Social	Informal networks and community spirit appeared strong, and most residents appeared to distrust formal organizations—only a third belonged to any formal organization and most of this membership was accounted for by church membership.
Physical	Many residents are displaced from rural areas and have lost their landholdings. Home ownership is highly valued—just over half of the household survey respondents owned their homes and most others aspired to but could not afford to own their homes. Most households also owned televisions, stereos, and telephones.

- self-employment, or less frequently, a collective business venture with others.
2. Increase financial assets in the long-term: Long-term increases in financial assets can be brought about through strategic investment in formal education, informal skills building and training, or through investment in a business. This type of strategy usually requires financial input, either savings from surplus or credit, and involves some risk.
 3. Reduce reliance on F: People can get by with less financial assets by developing assets that result directly in positive livelihood outcomes without having to be converted into money. Home ownership, informal trading, use of subsidized or collectively owned services (such as schools and hospitals), and use of formal and informal social support networks are all means of achieving this goal.
 4. Reduce draw on financial assets: This strategy is generally one born of necessity. If the financial assets currently generated by other assets are insufficient to meet all desired outcomes, and these outcomes cannot be achieved without financial assets, some of those outcomes will have to be foregone. Choosing which ones is a matter of strategy, and may involve a trade-off between the short and long term. Payment on water, electricity, and phone service can be terminated. Long-term strategies may also be minimized, put on hold, or abandoned. Students can stop their educational activities (type 2 strategy) and start or increase income-generating activities (type 1 strategy). Inability to pay for medical services may result in more immediate and serious consequences. Finally, those who do not have a house and are unable to pay rent must either find family or friends who are able and willing to house them or invade. The ongoing popularity of invading, despite the dangers of doing so, is evidence that many people in Aguablanca are seeking to reduce the draw on their financial assets.

In determining what strategy to pursue, one's age, gender, current assets, and role within the larger economic unit of the family are all important

factors. Some trends resulting from the interaction of these factors are summarized in Table 3.

Telecenter Users Compared with Non-Users

The household survey provided information on the general penetration and use of computers and the Internet in neighborhoods surrounding the telecenter and provided a baseline for comparison against telecenter users.

The household survey found that 55% of respondents had used computers or the Internet at least once, as shown in Figure 4. Most of these had used these technologies for the first time within the last 2 years, as shown in Figure 5. Fewer respondents used computers and the Internet on a regular basis, also shown in Figure 4, although proportionally, regular use was much higher for the Internet than for computers alone. In addition, 45% of respondents reported at least one other member of the household had used computers, either with or without Internet connectivity. These figures contrasted dramatically with the ITU figures for the same period, which report the of Internet users in Colombia at below 3% (Nua Internet Surveys, 2002). This discrepancy is likely due to the way the ITU gathers its data (based on the number of hosts rather than the actual numbers of users) and the rapid change in users over a short period of time.

Most (52%) of those who had used computers reported that their first experience was at school. Work, home, friends' houses, courses, the telecenter, Internet cafés, and university were other places where people reported being initiated to computers. In contrast, few people had used the Internet at school. A third of respondents had first used it at the house of a family member or friend. Other places mentioned were technical college, university, work, and Internet cafés—one person named the telecenter.

Level of education and age have a strong inverse relationship among adults, and both are strong predictors of computer and Internet use. As shown in Figure 6, younger people generally had higher levels of education than previous generations—although those below the age of 17 were usually still in high school. About half of respondents under the age of 25 had used the Internet, and all respondents in high school had used computers. Of those enrolled in a technical college or university, 80% had used

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Table 3 *Livelihood Strategies by Key Demographics*

Demographic	Trends in livelihood strategies
Children	<p>Most families choose the long-term strategy of investing in their children's education to secure the future livelihood of both child and family.</p> <p>Poorer families may pull their child out of school temporarily or permanently when they are unable to pay school fees. Children in poor families may also work to earn immediate, short-term income.</p>
Young women	<p>Increased societal emphasis on education has created some new opportunities for young women who choose to continue their education, which often requires support from either parents or a husband. Pursuing education may lead to postponement of marriage and childrearing.</p> <p>Young women unable to complete primary or high school are more likely to marry and have children at a younger age and may additionally engage in informal economic activity from the home to complement their husband's income. Single mothers often live with parents or extended family and depend upon them for income, childcare, or both.</p>
Young men	<p>Young men face increased pressure to pursue education, and once married, are usually the primary source of income for their families. Young men who are unable to complete their education may find themselves economically marginalized and stigmatized and engage increasingly with gang subcultures for both social and economic purposes.</p>
Older adults	<p>Older men and women generally have lower levels of education and stronger informal skills and social networks. These informal skills and networks allow them to generate income through the informal economy but leave little opportunity within the formal economy. Older men and women tend to pursue long-term strategies at the household level by investing their time and other assets into raising and supporting younger family members. Health failure especially may leave them dependent upon family, and in the absence of family and strong social support, such older people are very vulnerable.</p>
Displaced people	<p>Individuals coming from rural areas to escape violence are likely to have a difficult time securing any type of livelihood, because they have few assets and transferable skills. They have lost most physical assets and are likely to have low education levels. Individuals with friends or relatives in the district are most likely to establish themselves successfully. Formal support is generally insufficient, and those without social networks may be forced to squat illegally, exposed to greater risk of sickness and violence and few economic opportunities.</p>

the Internet, whereas only 60% of technical college graduates had used the Internet (most likely because Internet access was not as widespread when they attended college or university). No adults with primary level education had used the Internet, and only 2 of the 22 adults in this category had ever used a computer. No one older than 55 had used either the Internet or a computer.

In general, those who had never used a computer were likely to be older, less educated, and to be a housewife or to work independently. Those who had used the Internet were more likely to be students or employed. There were no between-group distinctions based on gender or household location.

The telecenter user survey showed that 67% of its users were under the age of 25 and about half

were students. Not all telecenter users made use of the computer and Internet facilities—in fact, printing was the most common use. Although computer facilities were available at the Center for Basic Services and were free (with time restrictions) for students, they did not have printing capabilities. Comparing Internet users from the telecenter survey with Internet users from the household survey, the demographic trends were similar. In both surveys, Internet users were younger and better educated than nonusers, and many were still students. Internet users at the telecenter were on average younger than in the household survey, which is likely due to the high volume of students using the library and other computer facilities onsite.

On an aggregate level, there was no solid evidence that the telecenter was facilitating the appro-

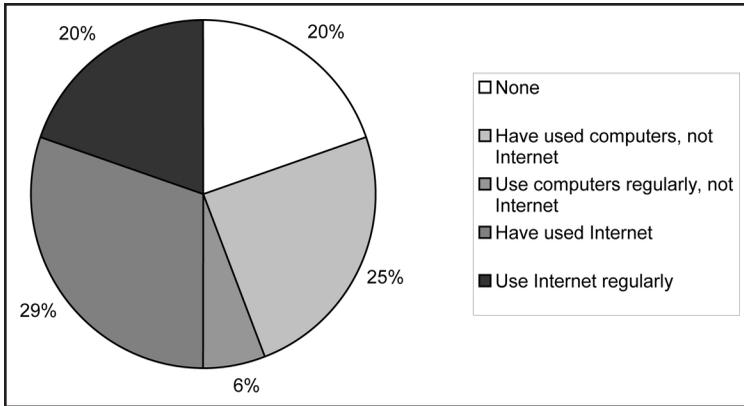


Figure 4. Level of ICT experience among survey respondents (N = 102).

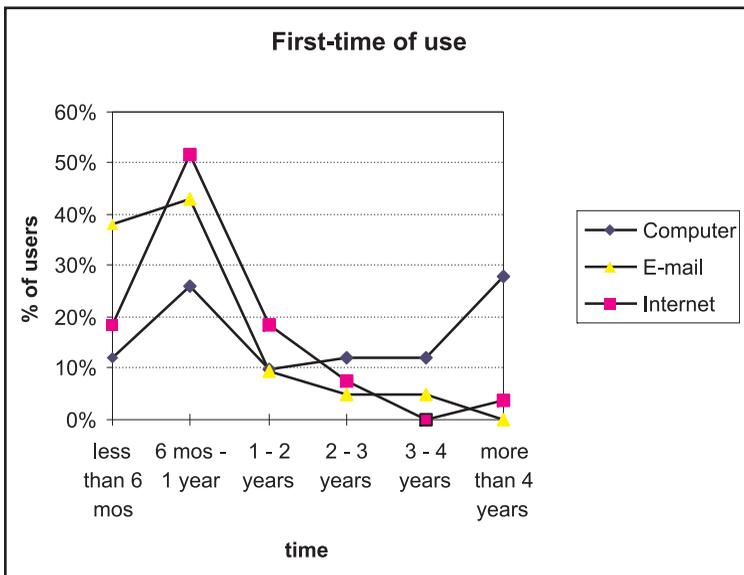


Figure 5. Rate of uptake for first-time technology users.

proportion, or at least the use, of the Internet by groups who otherwise tend to have less access. That is to say, the same proportion of older people and people with lower levels of education were accessing the Internet through other means, such as through friends, family, courses, and Internet cafés, as through the telecenter. The telecenter was not changing the overall pattern of adoption and diffusion of this technology.

Despite the lack of evidence indicating that the telecenter increased Internet access among certain groups, the telecenter supported some individuals who may not have otherwise had physical access to

the Internet and the opportunity to learn how to use it. Although they were few, such individuals, in interviews, placed great value on the telecenter. Thus, while the general pattern shows that most people using the telecenter are students and have similar levels and patterns of Internet use as their peers, the exceptions were important, and both staff and users placed great pride in this aspect of the telecenter. For example, some illiterate or semi-literate people used the telecenter to write letters or send e-mails with the assistance of the staff. Also, according to the observations of numerous people, the users of most Internet cafés tended to receive less support and arrived with greater technical know-how than their counterparts at the telecenter. As a public access place, the telecenter was thus more accessible than some of the alternatives. However, some businesses and informal methods of access, such as underground businesses and family and friends, appeared to offer an equivalent degree of support for those without experience.

Overall access patterns show that those with more education, correlated with greater household wealth, are more likely to use the

Internet than those with less education. For this reason, there is arguably a reason to target the telecenter specifically to people from groups with low rates of use—specifically those with low levels of education and older people. However, many people within these groups may not have the resources to pay for telecenter services and may not have any immediately apparent reasons for using it.

Reasons for Use and Non-Use

Individuals used the telecenter for similar reasons that they used other locally available Internet services. In both the household and telecenter user

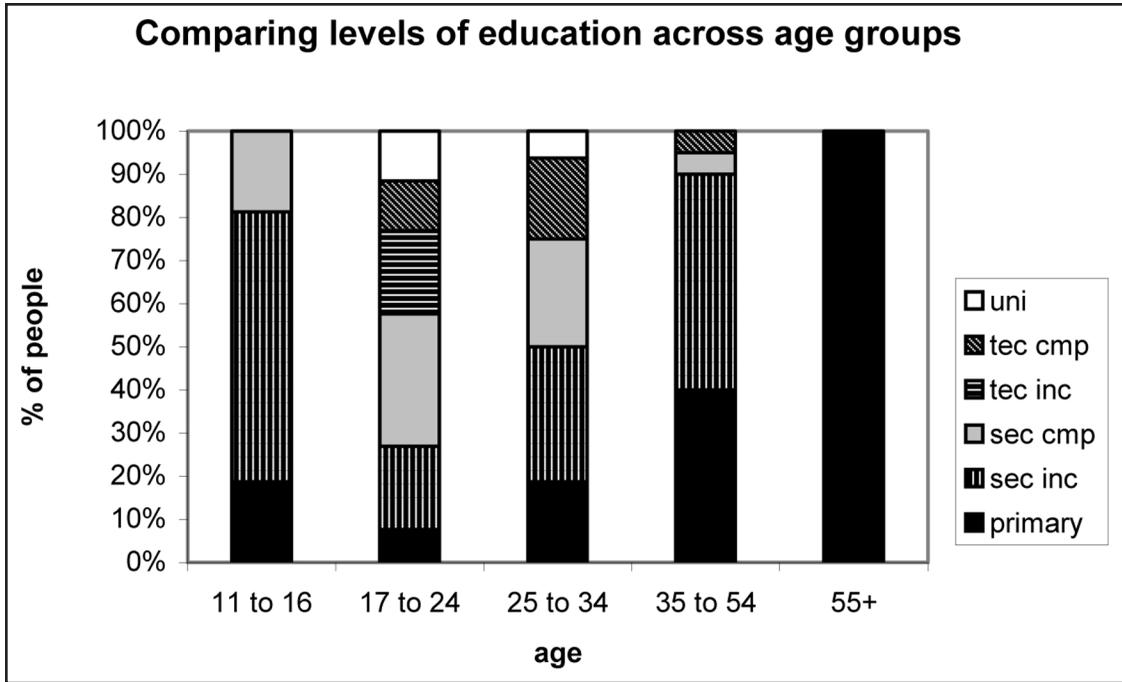


Figure 6. Educational attainment by age.

surveys, the Internet was used primarily to communicate with family and friends, either in the city or abroad, to research homework, and for entertainment or general information.

The usage findings from both the telecenter and the household survey are presented in terms of the four types of livelihood strategies identified earlier as follows: to increase financial assets in the short term, to increase financial assets in the long term, to reduce reliance on financial assets, and finally, when finances fell short of needs, to reduce draw on financial assets.

Using Computers and the Internet for Short-Term Increases in Financial Assets

The telecenter supported this type of strategy insofar as it supported the business objectives of its users. Few users (about 15%) used the telecenter for business purposes, whether they were employed or independent. These uses tended to be task specific and irregular, such as writing a letter or contract or producing a brochure. The telecenter's location within the Centro de Servicios Básicos also colored some of its uses. People needing to type and print forms for the notary public, bank, or other services would often use the telecenter for this purpose.

Those who had designed the telecenter hoped it might provide some support to unemployed people searching for jobs and self-employed people developing their businesses. Five telecenter users who were unemployed and five who were self-employed were interviewed and asked whether and how their use of the telecenter was supporting them in seeking work or running their businesses. None of the 10 used the telecenter for either purpose, and most did not feel it was suited to it. Rather, they used it, as did most other people, to support their own studies or the studies of a family member, or to keep in touch with someone in another country.

Within Aguablanca, self-employment and microenterprise opportunities using computers and the Internet appeared to be mainly on the service provision side—for renting out access time, offering value-added services, or maintaining and repairing equipment. Operating from one's house was one option that kept overhead down but limited opportunities for promotion and expansion, because these businesses were generally unregistered and illegal. Most people who wanted to rent out computer equipment also used it to increase their own knowledge (or their children's knowledge) of computers

and the Internet, and to support formal educational activities. This trend constitutes a blend of short-term and long-term strategies for increasing financial assets.

Using Computers and the Internet for Long-Term Increases in Financial Assets

Investment in formal education and training related to ICTs, or investment in equipment for business use, are the two main types of strategies in this category. Individuals with small businesses had a greater desire that their children learn to use computers and the Internet than in learning how to incorporate them into their own business and often bought a computer for their children's education rather than for their own professional pursuits.

At the telecenter, about half of the users we surveyed said that at least some of their use was directly related to schoolwork (i.e., completing assignments and doing school-related research). Not everyone who identified this kind of use was a student. Many parents said that completing their children's homework was one reason they came to the telecenter. A few teenagers and young adults also said they came to the telecenter to help their younger brothers or sisters with their homework. Also, a couple of teachers reported using the telecenter to research information related to their work. For example, one young teacher we interviewed said she had researched information on psychological issues relating to her students and how to cope with them. Like most of the people interviewed, she said she shared her findings with colleagues. She pointed out that there are few libraries in Aguablanca and the few in existence generally lacked large collections or up-to-date information. Thus, the Internet is an important information resource. Such use can also be viewed as an investment in the education and future prospects of her students. Two other local Internet cafés also reported that homework was one of the most common uses.

Using Computers and the Internet to Reduce Reliance on Financial Assets

Communication was the second main reason for using the telecenter, most often through e-mail and secondarily through chat. Most of this communication was for social purposes or to keep in touch with family or friends in other countries. Some people used the Internet to meet new people. These

uses served to maintain existing social networks, despite geographic distance, or expand them. These social networks, especially familial social networks, are also known to be important in the ever-growing remittance economy (Robinson, 2003). Where people would have otherwise maintained contact through long-distance telephone calls, e-mail was a less expensive option.

The telecenter specifically provided some money-saving opportunities. Some people saved money using the telecenter for other purposes, such as finding information that would otherwise require them to travel, and in a few instances, downloading government forms. It was also a cheaper option than formal computer classes to learn e-mail and other useful and practical applications, since the staff would provide informal one-on-one instruction and support.

Many telecenter users reported informally sharing the information they found through the Internet, or helping a friend or family member use it. Thus, informal social networks provided the main mechanism for indirect benefits to nonusers, most often related to homework, but sometimes to work, entertainment or other informational needs. The staff played an important role in facilitating problem-solving or information-seeking activities, a skill to which most people had very little prior exposure.

Using Computers and the Internet to Reduce Draw on Financial Assets

Individuals who were already failing to generate enough money or alternative assets to meet their basic needs were least likely to use either computers or the Internet. In the household survey, almost 60% said they were not using computers or the Internet because of lack of money. Since the telecenter depended on user fees to sustain itself, it was not accessible to such people. If they were to use the computer or Internet at all, it would be through informal networks of family or friends.

Synopsis of Findings

It was clear that most people interviewed had never thought about using the telecenter to address their economic needs in any direct sense. Some, upon being asked, felt the issue might be worth further exploration, whereas others felt it was irrelevant.

Nonusers in household surveys were asked why they did not use computers or the Internet, and they consistently answered that these technologies were

not for them. Then whom are these technologies for? There was an incredible concurrence about what computers and the Internet mean among both those who used them and those who did not, and among individuals who wished to use them and individuals who did not. The general understanding people in Aguablanca had concerning computers and the Internet was that these new technologies are now part of the new social and economic reality, and knowing how to use them is increasingly necessary for anyone hoping to enter the formal economy. But increased formal education is also part of this new reality, so for individuals who are older, who are content with their current livelihood, or who have a low level of formal education, there is relatively little reason to use computers and the Internet. Age was generally a more important factor than level of education in determining most people's decisions (although the two tended to correspond, as described earlier).

The Impact of the Telecenter on Social Equity in Aguablanca

Let us now return to the basic purpose of this study and the links between the study's findings and the broader literature on telecenters.

The impacts of the Aguablanca telecenter on local social equity appear to be, based on the data and analysis carried out in this research, limited and somewhat mixed. They are limited in the sense that the telecenter has moderately improved the choices and capabilities of its users, with little indirect benefit to nonusers, without really changing or challenging overall diffusion of the Internet within the community. Impacts are mixed because, although individuals who are able to use the telecenter most frequently and effectively are generally those who already have more choices and capabilities relative to others in the community, there are exceptions. Most users were high school students, many of whom had access in venues other than the telecenter. Exceptions included some housewives, independent businesspeople, and merchants using the Centro de Servicios Básicos who came across the telecenter and found it offered a supportive atmosphere that allowed them to explore ICTs for the first time.

Most uses of the telecenter have been oriented toward supporting formal studies, keeping in touch with family and friends abroad, providing entertain-

ment, and producing business-related documentation. Except for producing business-related documentation, none of these uses supports economic development in the way originally envisioned by the team. Individuals who were self-employed or unemployed with whom we spoke had not used the telecenter to help them with their jobs or find work. They explained that it simply had not occurred to them to do so, that they did not know how, nor did it seem to be appropriate use of the Internet. While the uses mentioned have value to those who engage in them, few are of central importance to their livelihoods. One exception is students who increasingly require access to computers to succeed in their educational aspirations. Second are those with close relatives overseas, many of whom depend on remittances sent by their relatives, thus, communication has important financial as well as social significance. The remittance economy is of increasing importance throughout Latin America (De la Garza & Lowell, 2002; Robinson, 2003).

Finally, the impact of the telecenter has been limited because of several overarching factors: difficulties with the Internet connectivity and general technical support, the lack of a clear and mutually agreed upon vision and plan for the telecenter, lack of targeted promotion and outreach, and failure to engage with local community development organizations.

Implications of these Findings for Telecenters in Development

This paper began by introducing InforCauca's project hypothesis that "the democratization of information and communications can foster sustainable development." "Democratization" is interpreted within this context to mean providing broad public access to ICTs, and through this, exploration of the new possibilities and applications of the technology from which everyone can benefit. Do the research findings, based on a case study of one of the three InforCauca's telecenters, support or contradict this hypothesis? And what are the broader implications of this for telecenters? Are they a worthwhile approach to development, and what types of value do they bring?

In considering these questions in light of the broader literature, we must also remember that the case study was conducted in an urban setting. Rural and remote contexts are quite different: both the

costs and the potential benefits of ICTs tend to be higher given the lack of infrastructure or market and relative scarcity of many types of information (Kenny, 2002).

Telecenters can provide only a few of the multiple types of access defined in the literature and only to a few people, usually the better off and better educated. The Aguablanca telecenter provided physical access (to those living nearby), financial access only to that portion of the population with the discretionary spending power and awareness to make use of the services, and some amount of skills building through its customer support. While the physical provision of access was a major project objective, other formal and informal businesses in the area were also providing access. Further, they generally had longer hours; faster, more reliable connections; and despite the lack of subsidization, equivalent pricing. These features typically distinguish funded and privately run access centers (Parkinson, 2005a). Another factor that limited the accessibility of the Aguablanca telecenter was people's own mindsets about who should use such services, with many older and less educated people automatically ruling out themselves. Again, such observations have been made elsewhere, including in rural Uganda (Dahms, 1999).

The access that telecenters such as the one in Aguablanca can provide tends to extend, rather than transform, existing socioeconomic reality. This socioeconomic reality mainly results from the popular mindset about how ICTs should be used, which placed an a priori limitation on the high hopes and best intentions of the InforCauca project leaders. However, when taken on a case-by-case basis, such a mindset seems quite justified and realistic. As individuals, telecenter users have little reason to believe they can challenge socioeconomic norms through their use of ICTs. One good example is a self-employed man who aspired to buy a computer—not for his business, but so his daughter could gain the appropriate skills to find a decent-paying job. Investment in a computer would generally not yield much return given the type and scale of most business in Aguablanca, so the man's choice is rational. Another illustration is an unemployed young man who used the Internet for other purposes and felt that it could not help him address his employment problem, because employers in the broader city did not want to hire him because he lived in a "bad"

neighborhood. These experiences support Castells' concept of a dual society, in which the marginalized are less able to benefit from ICTs. They also speak to Chambers' (1995) argument that development professionals often lack a sufficiently nuanced understanding of the realities of those whom they are attempting to assist. The vision behind the telecenter is that it would help to bridge these same gaps and help people improve their livelihoods.

Despite these rather depressing tendencies, there are exceptions. These exceptions are perhaps not enough to justify telecenters as they often exist, but they do point to a further potentiality that, as Heeks (2002) argues, tends to keep even jaded practitioners intrigued and motivated. The question then becomes "Under what conditions might the capacity of telecenters to contribute to local development be improved?"

The first point, already present in the literature and strongly confirmed by the research findings, is that the telecenter is not a standalone access strategy. Universally accessible education is especially crucial if the "information society" is to be an equitable one.

Secondly, extrapolating beyond the case study, telecenters may be more effective in contributing to development when they focus on effective social strategies that can go far beyond access at the individual level to challenge larger social realities. In the example of the unemployed man previously discussed, he alone is unable to address the stigma, but if a group of people felt strongly about the stigmatization of the district, they could use the telecenter to produce media—a Web site, among others, to show a different face of Aguablanca than that portrayed by the mainstream media. Indeed, this is one idea InforCauca staff had, although the complex organizational structure of the telecenter and the imminent end of project funding limited its implementation. Beardon (2005) and Parkinson (2005b) both describe examples of cases where ICTs introduced to communities through participatory processes can contribute to locally determined development goals.

Finally, it is worth noting some of the factors limiting the Aguablanca telecenter's capacity to implement such a community development strategy. It had three organizations working in partnership to implement the center. The decision-making process was lengthy, usually occurred off-site, and was led

by people with limited direct experience of the day-to-day reality of the telecenter and who had few or no connections to the surrounding communities. This type of arrangement limits the capacity of the telecenter to respond to and grow with the community, and it limits the possibility of real community ownership and involvement in the telecenter beyond obtaining services. While the market may solve some of these problems, insofar as small private businesses may be closer to and respond faster to their customers, they will cater to those with the greatest purchasing power and can only respond to existing markets, meaning that poorer people and community-determined purposes will remain largely unserved (Dymond & Oestmann, 2002).

Telecenters are not a quick and easy solution to the digital divide. They may in fact contribute to patterns of exclusion if they are not strategically designed to do otherwise and if they do not exist in a broader policy environment that also addresses key areas such as accessible public education. What, then, do telecenters contribute to development? In the Aguablanca case, substantive positive contributions to local development appeared slight. However, some experiences at the Aguablanca telecenter, and the stories of other telecenters, suggest that telecenters can make positive contributions to development (Fuchs, 1997; Ladikpo, 2003). The literature suggests that their capacity to do so depends, in part, on visionary leadership, a simple and flexible organizational structure, and strong community involvement (Fuchs, 1997; Etta & Parvyn-Wamahiu, 2003). These subtleties mean that telecenters can rarely succeed as a mass strategy. Broad-based national telecenter programs have generally failed, as they have in Argentina, Mexico, and South Africa (Delgadillo et al., 2002; Robinson, 1998; Benjamin, 2001). ■

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