Research Article

The Contribution of User-Based Subsidies to the Impact and Sustainability of Telecenters—The eCenter Project in Kyrgyzstan[1]

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Abstract

We examine the extent to which user-based subsidies can promote the financial/social sustainability and development impact of telecenters. We do this by looking at a coupon scheme used by the USAID funded eCenter network in Kyrgyzstan. We found that user-based subsidies have, to a certain degree, aided financial sustainability by bringing new users to the center. However, the distribution of the coupons did not improve social sustainability since, for instance, the process favored more regular users of the eCenters. Finally, the coupon program had a limited development impact on participating communities. We argue that, if the eCenters had narrowly targeted particular participants for the coupon programs, it is likely that the benefits of the program could have been enhanced. A method of incentivizing eCenter management to perform such targeting is probably required.

1. Introduction

As a method of improving access to information and communication technologies (ICTs), the telecenter is popular among donors and governments in many different countries (Gómez & Hunt, 1999; Ó Siochrú, 2003). The concept of the telecenter emerged from a community-driven movement in Scandinavia in the 1980s (Fuchs, 1998). For poor rural communities, telecenters can provide access to communication and content. This can include access to market and crop prices and to financial information/services, as well as communication with friends, family, and business colleagues (Proenza, Bastidas-Buch, & Montero, 2001). Telecenters can also support the delivery of government services (Kumar & Best, 2006). Today, telecenters can be found in many countries, where they are referred to by a plethora of terms: tele-cottages, public information access points, non-commercial cybercafés, public Internet access points, or multipurpose communications centers. While each of these terms represents slight differences in the object being discussed, the common characteristic of telecenters, as that term is used in this paper, is the availability of publicly accessible ICT resources, such as computers, peripherals, and Internet

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1. This paper is based on the results of an evaluation provided to the Academy for Educational Development (AED) of the USAID-funded eCenter project in Kyrgyzstan in June 2007.

access, in one or more physical locations that are available with or without fees.

As with any other development intervention, a common objective is to make the telecenter sustainable. Another objective is to address the problem of poverty and other socioeconomic concerns within the community at large—in other words, to ensure that the project has real community impact (Dagron, 2001; Mercer, 2006).[2] However, many telecenter projects have not realized either of these objectives for a variety of reasons, such as a lack of income; inappropriate services; little or no local content (Colle, 2005); inadequate infrastructure (power, roads, telecoms, etc.), particularly in remote areas (Roman & Colle, 2002); lack of political, social, or managerial sustainability (Best & Kumar, 2008); or the challenge of identifying local and global partners that can move the telecenter to a larger scale (Fillip & Foote, 2007). These challenges are enormous, and they have often relegated telecenter initiatives to the "forever pilot syndrome" (ibid., p. 11).

Thus, sustainability and impact remain the two principal questions related to rural telecenters. Rural locations provide unique challenges as compared to urban locations for a number of reasons, including that they have less dense populations to provide a user base, and they often have higher Internet access fees because long-distance phone calls for dialup service are common. Also, rural users often have fewer opportunities to gain computer skills elsewhere, and without these skills, they may not see the utility of a telecenter. In response, various strategies have been developed to advance the sustainability and impact of telecenter projects. One approach is the provision of subsidies for telecenter users. These are often applied for a limited period and enable the use of ICT services by community members who might have not been otherwise able to do so. While not necessarily a new approach, there is little research that examines the connection between user-based subsidies and sustainability or impact. The question that we wish to explore in this paper is this: To what extent can user-based subsidy programs promote the sustainability and impact of telecenters? We do this by examining a user-subsidy coupon scheme used by the USAID-funded eCenter network in Kyrgyzstan.

The rest of the paper is divided into several sections. First, we discuss issues surrounding the impact and sustainability of telecenters. We then discuss the eCenter project in Kyrgyzstan. Next, we articulate the methodology used in addressing our research question. Finally, we present our results and analyses based on our definition of sustainability and impact, positing some conclusions.

2. The Impact and Sustainability of Telecenters

Typically, telecenter interventions are intended to become financially independent and solvent. This can be in terms of meeting maintenance costs, the recovery of initial investments, acquiring sufficient human resources/staff, or achieving an adequate level of service delivery (Harris, Kumar, & Balaji, 2000; Proenza, 2001). Sustainability can also be viewed from a social point of view. Thus, sustainability hinges on having local champions; sufficient community acceptance, awareness, and involvement in the running of centers; a range of users that is non-discriminatory and balanced; and beneficiary participation in project design (Proenza et al., 2001; Roman & Colle, 2002). Additionally, there are political factors to be considered, such as accessing local and national political support for the project (Kumar & Best, 2006). This includes having a policy and regulatory environment which is conducive to the development of both telecommunications infrastructure and a competitive Internet market (Whyte, 1999).

Investigators have proposed a number of theoretical frameworks to improve our understanding of sustainability, including the critical success factor (CSF) and critical failure factor (CFF) models (Heeks, 2001; Heeks & Bhatnagar, 1999); the "design-actuality" (Heeks, 2002) or "design-reality" gaps (Heeks, 2003); scenario analysis for long-term sustainability problems (Aichholzer, 2004); economic and financial sustainability models (Best & Maclay, 2002); and political and institutional models that underline the need for commitment on the part of political leaders and public managers. Previous works by one of us (Best & Kumar, 2008; Kumar & Best, 2006) have presented a sustainability failure

2. In fact, we note that a successful telecenter program might be one that has had significant impact (e.g., one that has spun-off a few small businesses) but has no long-term sustainability (e.g., the program transitions and closes after a few years).

model built upon the work of Heeks and Bhatnagar to help explain why projects that succeed initially can still fail to enjoy long-term sustainability.

While the problems of sustainability are fairly well-documented (and theorized), the ultimate goals of community *impact* (and the measurement and evaluation of such impact) may be less conclusively observed. To date, most literature has focused on formative or process evaluation, as opposed to summative or impact evaluations (Hudson, 2006; University of Washington Center for Internet Studies, 2008). And the literature that does focus on social or economic impact assessments of telecenters on their broader community has yet to demonstrate an absolutely conclusive link (see Kuriyan & Toyama, 2007, for a review).

From the above discussion, and in tandem with previous research, (Bailur, 2007; Best & Kumar, 2008; Harris, Kumar, & Balaji, 2003; Kumar & Best, 2006), we have selected two main dimensions from which we examine sustainability:

1. Financial—This includes the financial independence, business performance, and solvency of the project over time.
2. Social—This refers to the equitable distribution of benefits among target groups, equal access and use, and locally relevant content/services (particularly important in multilingual societies).

In addition, we study the center's development impact as it extends into the broader communities themselves. We can observe this in both economic and social forms, such as new educational opportunities, community empowerment, job creation, local economic development, etc.

Various initiatives have striven to manage the inter-related issues of impact and sustainability. The literature consists of many general prescriptive reports and descriptive case studies of such initiatives (Badshah, Khan, & Garrido, 2003; Colle, 2005; Jensen & Esterhuysen, 2001; UNDP, 2006). With regard to sustainability, some governments have used universal access funds to offer financial incentives to firms that can provide telecenter services in rural and low-profit areas (ITU, 2003). Governments and donors have also directly provided grants to telecenter projects. In some cases, these grants are used by community not-for-profit groups that contribute in-kind resources to a project (Proenza, 2001). Others have reported on specific or novel approaches, such as incorporating business incubators into the telecenters and sharing resulting profits with the telecenter organization (Khelladi, 2001).

Alternatively, user-based subsidies can lower the costs that the users themselves pay for services they seek. The hope is that, if well-conceived, user-based subsidy programs can enhance both financial sustainability (by creating an early flow of income while developing a customer base over the long term) and social sustainability (by providing subsidies that target under-served or overlooked populations—for example, women). Additionally, if the subsidies are for activities that are likely to lead to economic, social, or political growth within the community at large, then the impact of the telecenter should, ultimately, be enhanced.

This approach has been used in a variety of settings, including the Cotahuasi Internet Cabina project in Peru in 1997. In that case, the use of the telecenter's services by local community leaders was paid for by donor funds (Proenza et al., 2001). Another example of user-based subsidies was the PC3 project in Bulgaria. Pre-paid coupons were distributed in communities where the PC3 centers were located. The main goal was to promote the centers while quickly developing a client base. This helped to reduce the financial risk faced by the new PC3 centers (Tifft, 2003). The eCenter project in Kyrgyzstan employed a similar logic and structure in the use of coupons as an incentive for both the local eCenters and clients.

3. Background—The eCenter Project in Kyrgyzstan

Kyrgyzstan is a small Central Asian country that was part of the former Soviet Union. Some of the main economic sectors include agriculture and mineral-based industries. In service sectors, trade is particularly important in rural areas. Although it is landlocked with limited resources, it has achieved economic growth of around 4% between 2000 and 2005 (IBRD, 2007a). Nevertheless, the poverty rate continues to be of major concern. The national estimate of people living below the poverty line was 43% in 2005, with larger percentages in rural areas. In addition, the unemployment rate was estimated at 8.1% in 2005, with 13% in urban areas (IBRD, 2007b). This implies that a significant part of the population, though employed, is still poor.

In 2002, the government approved a "National

Strategy for ICT Development in the Kyrgyz Republic" as part of its plan to use ICTs to address development issues. In general, this emphasis reflects what Ure (2005) notes is a more open approach to the diffusion and use of ICTs by the Kyrgyz government when compared to its neighbors. However, the growth of the Internet has been hampered by the monopoly held by the state telecommunications company Kyrgyztelecom, which is deeply in debt to the World Bank and seeking to return to profitability. One consequence of this is that, relative to average incomes, Internet subscription costs are high. Recent estimates put Internet user rates at a relatively low level of 13.3% (CAICT, 2007). Following the larger social and economic context, Internet access via private, home-based means is not likely to grow substantially anytime soon, and outside the capital, public access is limited, expensive, and usually not fast. Given the problem of poverty and the acknowledged importance of information resources for economic development, the need to provide alternatives to private use and enhance public ICT venues is viewed as an important public policy objective.

The eCenter Project

The eCenter project was launched in Kyrgyzstan in July 2005. It was funded through the Last Mile Initiative of the United States Agency for International Development (USAID), which seeks to promote greater access to information and communication technologies, particularly in rural and underserved areas. The goal of the project was to augment and network a group of telecenters across the country, with the aim of promoting local economic development. The eCenter project was introduced into a landscape of relatively nascent ICT usage. As of 2006, only about 28% of the Kyrgyz population claimed to use computers, and only 2.5% of those had a computer at home (CAICT, 2007). While the numbers of mobile phone subscribers in 2006 are hard to come by, context is provided by the following: by 2007, 45% of the population reported using a mobile phone, whereas computer users had increased only slightly, to 28% (ibid.). The gender breakdown of computer and Internet users in this time frame showed a slight majority of female users over male. National literacy rates have held steady over the past decade at 98–99% (ibid.). The eCenter project expected to leverage this high literacy rate while providing an alternative pathway to ICT usage.

Each telecenter was established within a preexisting business. In this way, the centers sought to improve local access to ICTs, stimulate local business creation, improve computer skills, and increase opportunities in non-traditional employment training and job creation among the local population. The local project manager in Kyrgyzstan was the Civil Initiative on Internet Policy (CIIP),[3] a Kyrgyz nongovernmental organization that focuses on the promotion of civil society interests in the development of national ICT policy.

The project started in July 2005 with a total budget of US$390,000. During this time, a group of seven eCenters were established across the country (see Figure 1):

1. Karakol
2. Bosteri
3. Naryn
4. Nookat
5. Karasuu/Osh[4]
6. Ivanovka
7. Talas

Each of the eCenters provides a variety of fee-based services, including Internet access and e-mail, printing, scanning, copying, faxing, multi-media services, and IP-telephony. The exact suite of services offered varies from center to center. Each center also delivers a curriculum of computer literacy courses which consist of several modules: Windows, Microsoft Word, Microsoft Excel, and using the Internet. Additionally, some centers offer accounting courses, and one offers leadership training.

Table 1 lists the estimated number of competing Internet cafés within each of the seven communities which had eCenters. It also includes the total estimated population size for those communities. These figures help to sketch the overall competitive landscape of the centers. By looking at the number of employees, we also get a sense of the relative size of each establishment. Note that, while this table

3. See http://www.gipi.kg/ for an overview of CIIP.
4. The Karasuu eCenter moved to Osh city in April/May 2007.

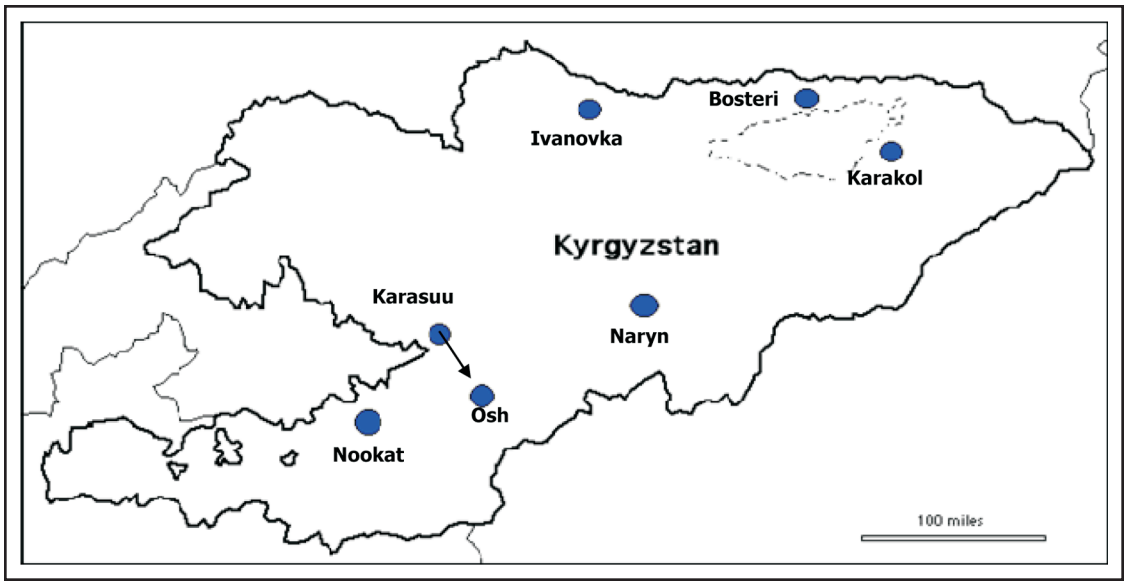

Figure 1. Map of eCenter locations in Kyrgyzstan, total population approximately 5.2 million.

Table 1. Summary Characteristics of the eCenters.

eCenter	Number of Employees	Competing Internet Centers	Population Estimate—1999
Karakol	7	10	64,322
Bosteri	4	0	12,000
Ivanovka	6	0	20,000
Talas	3	2	32,638
Nookat	4	0	30,000
Karasuu (Osh)	3	0 (80)	19,143 (220,000)
Naryn	4	10	40,050

focuses on Internet provision, the centers also offer related business services, such as printing or photocopying.

User-Based Subsidies

There were two main components to the eCenter program. First, there were subsidies granted to the eCenters for the provision of computer literacy/accounting courses, and second, free or discounted Internet access was offered to local community members. The subsidies for computer literacy or accounting courses came in the form of reimbursements to the eCenter operator for the training costs of those who passed each course. People were able to participate in the courses by receiving coupons. Similarly, Internet access was subsidized through the use of five-hour coupons that were distributed to users. The subsidy level on both the computer training courses and Internet coupons changed over time. Subsidy amounts were reduced 20% each quarter; while the project paid for 100% of the cost of a training course in the first quarter, by the fourth quarter, it paid only 20% of the cost and required the user to pay the 80% balance.

Partnering with Local Businesses

Each eCenter was established as part of an existing local business, rather than through the creation of

new centers. Suitable local business partners (including pre-existing telecenters) were selected through a competitive bidding process based on criteria such as related prior business experience, existing level of investment, relevant telecom experience, and the potential for further expansion of programs. Subsequent to a center's selection, CIIP provided technical support on the use of the subsidy program and delivered training to the business owners and their staff. While some of the selected eCenter sites were already providing Internet services, others were engaged in computer graphics and photocopying services, gaming, and computer repair, or were providing computer training courses.

There was one final component of the eCenter project: a land grant program where suitable land for investment in office space and technological parks could be linked to each eCenter. It was envisioned that such investment would be supported by the success of the eCenters; this component of the project, however, did not achieve expected outcomes and was eventually dropped.

While there are several interesting aspects of the eCenter project as a whole, we have focused only on the user-based subsidies in this study. The following sections present our findings and analysis of the user-based subsidies component of the eCenter project.

4. Method

We employed a mixed-method approach to study the effect of the coupon program on the sustainability and impact of the eCenters. Our research consisted of site visits to all telecenters that were part of the eCenter program, seven in total. These visits were done in collaboration with local researchers and took place between March and June 2007. Our research instruments included a user survey and interviews with all the center managers, available members of their staff, and local businesses. These data were supplemented by a review of user logs, project reports and updates, and business proposal guidelines. Interviews and surveys were administered in both Russian and Kyrgyz, depending on the preference of the research subject.

The user survey consisted of 62 questions developed around the issues of sustainability and impact. Specifically, it explored how the computer training and Internet coupons were used, the ways users engaged with ICTs at the eCenters, and the perceived economic impact of using the centers. Generally, the survey did not require users to recall past activity at the eCenter, focusing on the present, instead. The majority of the questions were close-ended, though there were a few open-ended questions to capture opinions on issues related to the centers.

To determine our sample size, we estimated the overall population size as the number of users at each eCenter over the period for which data were available: January 2006 (the functional start of the program with the opening of project telecenters) to January 2007. We defined users as those who participated in the subsidy (coupon) program of the centers for either Internet access or computer training. Given this approach, we approximated the total user population at 9,497 people, and thus ensuring a confidence level of 95%, we required a sample size of 369 users. In addition to sampling the appropriate number of users, we also needed to ensure that our sampled subjects were representative of the population across each of the seven centers. To guarantee this, we stratified the sample size according to the proportion of users from each location.

To identify subjects from each of the centers, user contact lists were obtained from center staff. Users were then randomly selected from each list. In many cases, however, these lists were incomplete, with either missing contact information or incorrect contact details. To account for this difficulty, research teams substituted or augmented random sampling with subjects obtained by opportunistic sampling at the eCenters during site visits. In addition, the researchers worked through the social network of users at each site in order to find both previous and current users of the eCenters. Thus, user surveys were first collected using standard random sampling techniques when possible, and then later, with a combination of convenience and snowball sampling.

Table 2 gives the targeted sample size, and actual number of subjects surveyed, for all seven eCenters; in almost all cases, we were able to over-sample the population. The one center that was under-sampled (Bosteri) was closed for renovations during the data collection period, complicating researchers' attempts to contact users.

Table 2. Targeted and Actual Sample Size of User Surveys by eCenter.

eCenter	Targeted Sample Size	Actual Number of Collected User Surveys
Naryn	70	79
Bosteri	50	40
Karakol	75	87
Karasuu	67	70
Nookat	66	72
Talas	22	27
Ivanovka	18	19
Total	**369**	**394**

Table 3. Summary of User Characteristics.

eCenter	Male %	Female %	Average age	Bachelors or higher %	Married %
Karakol	44	56	21	48	10
Bosteri	25	75	18	10	3
Ivanovka	53	47	18	5	0
Talas	33	67	23	15	19
Nookat	67	33	24	24	39
Karasuu	41	59	21	30	14
Naryn	31	69	24	47	25
Total for all users	43	57	21	32	19

5. User Survey Results[5]

Table 3 summarizes the general user distribution across the various centers. We found that the majority of users were women, except in Nookat, where the more traditional culture in the South seems to limit female participation at the eCenters. The majority of users in the sample were also typically young, suggesting that the propensity to use ICTs is linked to age, particularly where the general diffusion of such ICTs is low (e.g., in rural areas). This young user group is consistent with a nationally young population (31% below 15 years in 2005 [UNDP, 2007]) and also partly explains the low marriage rates among our sampled population. In general, older customers (above 30 years) used more of the basic ICT services, such as photocopying or printing, and they requested the assistance of younger persons or staff to help them when using the Internet. Older users were, however, just as likely to attend training courses.

The education achievement rates among users were similar to those nationally. In addition, a large portion of users were current students. This is explained in part by both the location of the eCenters (the Karakol and Naryn eCenters are both located near local universities) and the fact that they offer a combination of training and Internet access, which is useful for some students. Of those that were employed, the majority worked in the services sector, followed by education and agriculture.

Users were asked to identify the services that they used from a combined list of 24 services across all the eCenters, ranging from FAX machines to Web design. The most popular service was the Internet, followed by the use of Microsoft Office applications. These were also the two services that were offered by all the eCenters. Otherwise, the services offered, and their uptake, varied depending on

5. Statistical results mentioned in this paper are all significant to the 0.05 level, at least.

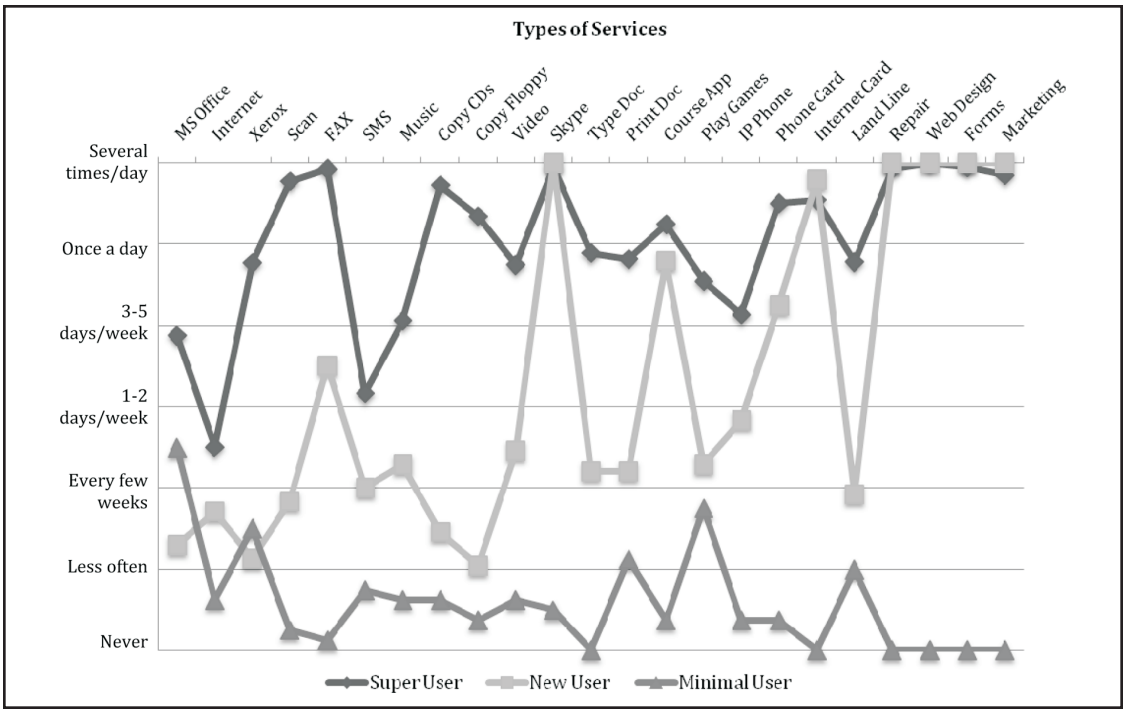

Figure 2. User archetypes based on frequency of use of eCenter services.

local demand. For example, although, overall, only 16% of all users bought mobile phone credit at the eCenters, in Nookat (24%) and Karakol (30%), these groups were larger and were part of the business focus of the managers in those centers. With the exception of Talas (Monday to Friday) and Bosteri (Monday to Saturday), all the eCenters were open seven days a week and kept normal working hours from around 9 A.M. to 6 P.M. Some managers reported staying open later depending on daily demand.

User Archetypes Strengthen Our Understanding of Who These Users Were

Each user was also asked to rate how often they used each of 24 eCenter services, using a seven-point scale that ranged from "several times a day" to "less than every few weeks" to "never." The result is that, for each user, we have a vector of usage data-points positioning each individual among the basket of services on offer. We then employed the k-means algorithm to cluster users based upon the frequency with which they used various services. K-means begins with a small set of clusters, assigning each user to one cluster center in a way that minimizes the "distance" between the user and this center point. Then, iteratively, these cluster centers are refined (and as required, users are reassigned to different clusters), so as to globally minimize across all the users the distance to their cluster center. Some users, who are not found to fall sufficiently close to one or another cluster center, are dropped from the analysis.

Using k-means with three clusters, we found that one-third of the users fall into one of these clusters, while the rest do not admit reliably to cluster membership. We then inspected closely what sort of user makes up these three clusters, as well as what range of services they are using. We found three distinct user archetypes, as illustrated in Figure 2. There are *new-users,* who make up 21% of those clustered; *minimal-users,* who make up just 7%; and *super-users,* who make up 72%. We found that the new-users are most interested in the Internet, course papers, phone cards, and FAXes, using these all, on average, once a day. The super-users, however, report frequent use of nearly all of the 24 surveyed services, except for instant messaging. The most fre-

quent service the super-users report employing is Skype. And finally, the minimal-users do not report engaging any service with real frequency. For them, the most common service used is Microsoft Office, and the second most common is game-playing, but in both cases, the average respondent said they used these services only once or twice a week.

When we explore the different approaches to the center for each of the archetypes, we find that new-users and super-users visit the center much more than the minimal-users. For instance, 7.9% of new-users and 17% of super-users visit the center at least once a day, whereas less than 1% of minimal-users visit with this frequency. We also find that super-users are the principal beneficiaries of the coupon program. For example, 57% of such users report having received coupons for the Internet at their eCenter, whereas only 6% and 1% of low-level and new-users have participated in the program. At least with respect to new-users, this can be explained by the fact that many of these individuals did not visit the center during the time period of the coupon program. Said another way, the new-user archetype may, in fact, consist mostly of new-users post the eCenter program.

6. The Sustainability of the eCenter Project in Kyrgyzstan

Financial Sustainability

All the eCenters enthusiastically implemented the coupon program, and several have since sought to expand their offering of ICT services by increasing the scope and size of their businesses. In all cases, the businesses stated that their financial situation was better off following the change to an eCenter. On average, according to the managers, this transition increased their revenues by an estimated 57% (with a low of 15% reported at Karakol, and a high of 100% reported at Talas). In addition, almost all of the center managers agreed that their clientele increased (some very significantly) after becoming an eCenter. The main sources of revenue varied from center to center, based on local demand. For example, Internet access was reported to be the main source of revenue in only two of the seven centers. Other revenue sources included computer training, typing services, IP telephony, and the sale of mobile phone credit.

The managers themselves were quick to praise the eCenter program, and they saw a direct connection between their success and the use of the coupons. Some of the managers estimated that 70–90% of their current customers would not have come to the center without having been part of the coupon program. Interestingly enough, a significant percentage of users did not actually rely on coupons. Of those surveyed, only 54% and 43% reported actually receiving coupons for Internet access and computer training, respectively. This implies that, perhaps, the managers had an exaggerated belief of the effect of the coupon program on their businesses. When asked if they would have used the eCenter services if there were no coupons, approximately 47% of respondents said yes, and 19.5% said they would not have used the center in that case. It should also be noted that the subsidies were only provided for a limited period. Thus, by the end of the project, users were paying for the full cost of Internet access and computer training.

The existing competitive environment (Table 1) appeared to influence the scale of impact of the coupons. For example, we found that, if the manager identified more competitors in the immediate community, the eCenter users were more aware of and more likely to have used other cyber cafés. If there were fewer competing centers in the catchment, then users were more likely to have used the eCenter prior to the coupon program. In other words, when the level of competition was heavy, the coupon program was more successful in drawing in new users.

Following the user archetypes mentioned above, super-users were mostly likely both to be returning users and to be recipients of an Internet coupon. Alternatively, some 33% of those who had received a coupon had not used the eCenter before. The results are very similar for training coupons. Thus, during the subsidy period, coupon use was associated with the introduction of new users, which can contribute to financial sustainability.

It should be noted that the decision to partner with existing and successful local businesses was also important for the success of the project. Generally, there is little evidence to suggest that the one-off donor grant approach can work (Harris et al., 2003), so some have argued for a business-centered approach to telecenters (Proenza, 2001). The rationale behind this approach is that the profit motive can promote financial sustainability. In the

case of the eCenter project, it was in the interest of the local business partners to make sure that their centers remained in operation and were successful. The coupon program supported the partnership with local businesses by ensuring a sufficient number of customers during the initial subsidy period. It was critical, therefore, in "kick starting" the operations of the centers, after which several of the local business partners were able to use this momentum to expand their businesses and tailor their suite of ICT services to their community needs.

Social Sustainability—Types of Users

We examine social sustainability primarily in terms of the equitable distribution of benefits, access, and use within the community. Ideally, a more balanced and representative user base should lead to broader community acceptance of the center and limited social exclusion. We found that many indicators of the user demographics mentioned earlier were in keeping with the local population. In each case, the user distribution at the eCenter was approximately proportional to the age, employment patterns, and religious and ethnic composition of the respective community. For example, the majority of employed users were involved in the small-scale trade which characterizes much of the activity in the overall Kyrgyz economy. Also, although most users were Kyrgyz (64%), other major ethnic groups accounted for a large number of users in communities where they were more common, such as Russian and Dungan groups (in Ivanovka), Uzbeks (in Nookat), and Tartars (in Karasuu).

Social Sustainability—Targeting and Distribution of Coupons

Based on the above characteristics, we found few statistically significant differences among users who received coupons and those who did not. Among those who received Internet coupons, approximately 51% were female. This could have had a marginal effect on the larger proportion of female users at the centers overall. Other variations in user characteristics (ethnicity, educational level, etc.) between those users who benefited from the coupon program and those who did not were not statistically significant. Also, there was no difference between those who got Internet coupons and those who did not, in terms of their perceptions of the importance of the Internet to their jobs or schools. In terms of the training courses, there were also no discernable demographic differences between those who received these coupons and those who did not.

What was different was whether or not the respondent had used the eCenter prior to receiving the coupon. As mentioned above, super-users were more likely to benefit from the coupon program. In fact, 66% of those who received Internet coupons and 60% of those who received training coupons had used the eCenter before. This suggests that prior users were in a better position to learn about the program and participate. The concern is that, while the coupon component of the project is now complete, the opportunity to attract larger numbers of new users to ICTs might not have been exploited completely. Thus, while the eCenters have financially benefited from the coupon program in the immediate term, the long-term social sustainability of the project may have not.

Two factors could help explain this type of coupon distribution among users. First, the implied goal of the project was to focus on persons who had the least access to the Internet and computer courses. However, the way the coupon program was operationalized did not appear to be systematic or consistent across centers. Moreover, the eCenters received no particular incentives to narrowly target users, and so some may have simply distributed their coupons to people already at their center. Thus, there was significant difference among receivers of both Internet and training coupons from center to center, though there was no discernable pattern to these differences.

Some centers seemed to offer coupons to whoever was easily available. Indeed, some were more concerned with issuing the coupons than with targeting them, and as such, they relied on informal means of distribution. One example of this is a neighboring Internet café owner in Karakol who said he received a training coupon for the computer literacy course. He was already exposed to more advanced computer courses, but he still chose to attend the eCenter course, since it was free at that time. Alternately, more formal means of distribution were used at other centers. For example, in Naryn, the intention was to target as wide an audience as possible. This was done through advertising in local media, and it actually did result in lines literally going out of the door of the eCenter. However, it is unclear what type of users this form of marketing attracted.

Second, the eCenters were encouraged, but not compelled, to give one Internet coupon per person, so as to increase the reach of the program. This suggestion, however, was not generally followed. For example, in Nookat, users were given one coupon per quarter, since, according to the manager there, it was difficult to continually find new Internet users. Alternatively, in Karasuu, the strategy was one coupon per individual. Thus, both targeting and distribution seemed to be dependent on the individual eCenters, a result of the compromise inherent when a private business undertakes a socially oriented program.

6. Development Impacts of the Coupon Program

Internet Access

Although this represents a preliminary and indirect impact of the program, the Internet coupons did, of course, increase access to the Internet among users. This access can be viewed as a form of impact. Indeed, in most cases, overall access increased in participating communities. For example, several of the centers are located in rural areas with limited access to ICTs. Thus, the introduction of the eCenters helped to meet the latent local demand for ICT services and training. Given the relatively high subscription costs for the Internet, this also meant that the eCenter could have been the only source of Internet access for some users. This was the case in at least three of the communities.

For many, the communication function of the Internet was most important, particularly where regular post mail services were infrequent. For instance, one coupon recipient, a travel agent, reported that he once used the Internet services at the eCenter in Nookat to help get a passport for his brother. Another recipient, a student, reported how using the Internet helped her with her high school work. While the most common online activities were sending/receiving emails and instant messaging, other important uses included reading news, doing work or research, downloading music, and participating in chat rooms.

Finally, in addition to providing increased quality or availability of Internet access, the eCenters have also been an important place for users to gain Internet-related skills. Approximately 70% of those who received Internet coupons said that they had learned to use the Internet at their eCenter.

Development Impact—Computer Training

The acquisition of relevant skills is a clearer form of community development impact, and the eCenters provided local-language computer training courses which were received well by the participants. The courses were basic, allowing the centers to bring those with no understanding or experience with computers up to at least a foundational level of use. Completion was contingent on passing an evaluation which tested their ability to use the computer and some of the Microsoft applications they had studied. The majority of trainees were able to pass the test; the failure rate was approximately 10%.

For many users, there was a sense of pride in completing the course, and participants were quick to inform us of the benefits of receiving the computer literacy training. One such person was a school teacher who told us how her school had recently received some computers. At first, she was intimidated by this technology, but after attending the courses at her local eCenter, she was more comfortable with computers and felt that this skill had improved her potential as a teacher. For many, these courses provided the basis for the acquisition of job-related ICT skills. Eighty-five percent of all respondents stated that they acquired important job skills from their eCenter. Furthermore, some users reported actually getting jobs (usually clerical) based on these skills. Approximately 15% of all users reported finding a job as a result of using the eCenter. As noted earlier, the country has a high national poverty rate of 43%, as well as an unemployment rate of 8.1% (2005 data). Therefore, such impacts from the program should be valuable to both the unemployed and the working poor. We did not find, however, a link between users who participated in the coupon program and those who reported finding jobs due to training at the center but had not participated in the coupon program.

Approximately 61% of trainees who received user-subsidy coupons for their classes said they would pay for the service if there was no subsidy, demonstrating the value placed on the services and experience provided by the eCenters. Many of the eCenters are, in fact, planning to continue and even expand their course offerings past the lifespan of the subsidy program. For at least one eCenter, this is also the main source of revenue. Content was an important factor in promoting the demand for the computer literacy courses. Much of the design and content for the courses came from the initial

demand studies done prior to the start of the project. However, a few users suggested that, having completed these courses, they now want the center to offer more advanced computer courses. Continually modifying content to meet the needs of users will be a factor in supporting long-term development impact.

Development Impact—Local Economic Development

In terms of local economic development, we observed two types of impacts related to the introduction of user-subsidies at the eCenters. First, some eCenters seem to have stimulated the local market for ICT services. For instance, there are approximately 10 other commercial computer centers in Naryn that were established after the eCenter opened its doors. Second, however, was the potential for a negative impact. In Nookat, prior to the introduction of the eCenter, there was one other business offering Internet services. This closed soon after the opening of the eCenter, as it could not compete with the initial subsidies being provided for Internet access. That other business now operates as a café.

One of the objectives of the eCenter project was to support local business development. Of all users, only 5% said that they were able to utilize either the facilities or courses at the eCenter to establish a new business. Most of the businesses were located in the services sector, and a few were specifically in the ICT sector. Of these users, there were no significant differences in terms of gender or levels of education. They were not necessarily in a higher income group, either; for example, they were no more likely to own a car than those who did not start a business. Finally, in terms of coupon use, there was, again, relatively little difference between those who reported starting a new business and those who did not.

Whether we refer to the efficacy of the training courses or improved Internet access, one qualifying factor to note is the initial limited diffusion of ICTs in the targeted communities. This initial lack of ICTs in these mostly rural/semi-urban communities meant that the potential for the subsidies to have some modicum of impact was there from the start. We cannot be sure whether the development impact would be similar in other contexts. However, we can indicatively point to the example of the eCenter in Osh city, where there are some 80 other cybercafés, various documentation centers, and in general, better infrastructure for the delivery of ICTs. In an environment such as this, the eCenter modified its strategy to focus on the provision of training courses, as there were few organizations providing this service. Thus, the business focus of the eCenters, coupled with the goal of providing relevant ICT services to targeted communities, can potentially create an impact in a variety of contexts.

7. Summary and Conclusions

The eCenter program provided subsidized coupons for computer courses and Internet access to users of already-established commercial computer centers. Thus, the center owners provided the physical infrastructure for each eCenter, and the subsidies helped them to access, and ostensibly expand, the local market for training and Internet services. The project, therefore, represented a merger between the public goals of increasing ICT access and literacy, and the private goals of increasing profit and market share.

We focused on the subsidy component of this project, as an innovative approach to researching telecenter development. As such, we attempt to address a gap in current research by exploring the relationship between user-based subsidies and the sustainability and impact of telecenter initiatives. In this case, we examined sustainability in terms of its financial and social dimensions. By "financial sustainability," we mean that we looked at an eCenter's financial independence and solvency; by "social sustainability," we mean that we were primarily concerned with the distribution of access and benefits to the community. There are, of course, other dimensions that could have been included, but we wanted to limit our analysis in such a way as to make it focused and useful.

In terms of financial sustainability, we found that the coupon program brought some new users to the centers during the subsidy period. Self-reporting indicates that a third of Internet coupon users and 40% of the training coupon users were new. More importantly, 19.5% of users stated that they would have not have used the services of the eCenter without the coupons. The coupons also helped the local businesses thrive with customers during the initial subsidy period; the program was critical, there-

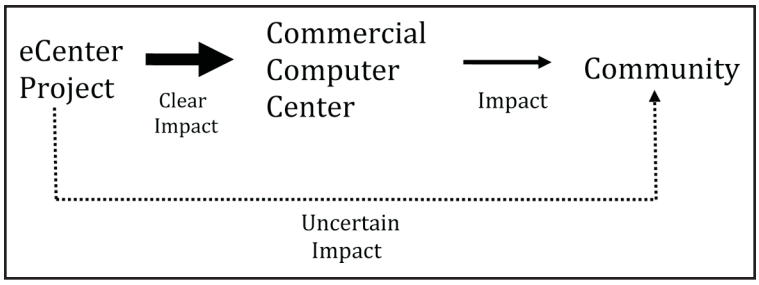

Figure 3. Impact diagram of eCenter project on centers and wider community.

fore, in "kick starting" the operations of the centers. Thus, we argue that the coupons have, to some degree, aided financial sustainability by bringing new users (and therefore additional revenue and an expanded long-term customer base) to the centers and creating a stable source of income during the initial stage of operations. Obviously, temporary subsidy programs may actually weaken long-term financial self-sustainability as the program winds down. But in this case, while we observed the end of the program, we did not find evidence for an immediate decline in revenues.

In terms of social sustainability, the distribution of the coupons did not lead to any significant differences in the type of users, except for a marginal increase in female participation. We find that the distribution of both Internet and training coupons favored more regular users of the eCenters. This implies that the opportunity to expose as many new users as possible to ICTs may have been missed, an outcome that could have limited the wider social impact of the project. One of the main reasons for this was the lack of effective targeting strategies among the centers.

Finally, the coupon program had a limited development impact on participating communities. One preliminary impact was the enabling of Internet access for users and the learning of Internet-related skills. The coupons also facilitated general computer skills training. However, among those who reported economic benefits (subsequent employment or starting a new business) after acquiring these skills, there was little or no difference between those who had been coupon recipients and those regular users who had not availed themselves of the program.

Thus, we find that the eCoupon program had clear positive impacts on the commercial computer centers, and that these centers had an impact on the community. However, as illustrated in Figure 3, we could not establish a clear link between the coupon program, specifically, and development impact within the community.

One possible reason for this is that, as the targeting and distribution was left up to the local eCenters, there might have been less emphasis on sustainability and impact, and instead, more emphasis on short-term profit. We argue that both the sustainability and impact of the coupon program could have been improved with a more focused targeting strategy. For example, better social targeting of the coupons could have included more women, particularly in the more traditional areas of the country, or other groups, such as the poor, minorities, etc. From a financial sustainability point of view, targeting new users could also have been more effective. In terms of impact, coupons could have been distributed, for example, specifically to young entrepreneurs looking for skills or access to grow their businesses. Future user-subsidy programs should examine ways to incentivize the local center managers to design and implement targeting programs that enhance social and financial sustainability, as well as overall community impact. Additionally, some broad parameters and techniques to this targeting could be developed centrally and offered to participating center managers.

In addition to effective social targeting of user-based subsidies, the extent to which this program can be replicated in other countries also depends on some of the factors that assisted its implementation in Kyrgyzstan. These include local market conditions and the diffusion of ICTs. That is, the emphasis on smaller rural population centers was conducive to the success of the centers, something which could also be relevant when applying this program in other countries. Another factor is the identification of suitable local business partners. In this case, the application processes through which business were identified could also be used elsewhere.

The research results also indicate other areas for potential research in telecenter sustainability. For example, in six of the seven eCenters, the majority

of users were women. While we did not set out to explore the influence of the coupon subsidy program on gender issues, it would be useful to understand the nature and extent of such a relationship in future work.

Even with decades of worldwide experience constructing, operating, and evaluating telecenters, the research reported here makes clear that the often-cited preeminent goals of the telecenter movement—socioeconomic sustainability and substantial community impact—remain difficult to obtain. Further experimentation with models and approaches, along with close observation and continued independent assessment work, is required if we are to realize these ultimate ambitions. ■

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