Research Article

Employment and Youth Inclusion into the Labor Force via Training in Information and Communication Technologies (ICTs): The Cases of Brazil, Colombia, and Mexico*

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Abstract

As information and communication technologies (ICTs) become widely used in most economic sectors, there are increasing opportunities for marginalized groups to join new productive processes. These career advancement opportunities are particularly attractive for poor, young individuals; however, this increased adoption may also widen social and economic gaps by providing few access points to already-marginalized groups. This study examines ICT training by nongovernmental organizations (NGOs) in three countries in Latin America: Brazil, Colombia, and Mexico. Specifically, the study analyzes the use and effects of such training as a strategy for integrating marginalized youth groups into the knowledge-based economy.[1]

NGOs may play important roles as liaisons for effective adoption of ICTs. Professional training skills required by current market demands are, undoubtedly, a factor that contributes to the ability of marginalized youth to search for and secure employment. Today, these groups are socially and economically excluded. They face numerous obstacles, including a lack of both the quality education and the skills currently required by industries using ICTs and the support networks to obtain either employment or self-employment. ICT training offers unique opportunities for integrating marginalized youth into the new knowledge-based economy.

Introduction

This research analyzes if and how these opportunities have benefited young individuals who completed training programs offered by selected NGOs. It assesses the value of ICT training for integrating young individuals into the labor market. In addition, it examines whether NGO organizational tools have provided support for youth in searching for employment,

obtaining jobs, setting up businesses, and/or making improvements to existing companies.[2] The research is based on interviews and surveys given to beneficiaries, as well as to staff working for NGOs.

The research questions addressed are the following: How do NGO community centers provide capacity building to youth for entrepreneurial activities in urban areas in Latin America? What is the role of ICT skills in these programs? What organizational alliances are NGOs building to support the economic and social development of these youth? How effective are the training programs in creating economic opportunities for beneficiaries? How do beneficiaries rate the training, and how do they assess the ICT skills they have acquired as tools for improving their lives and those of their families?

The first section of this article examines the literature on the topic and characterizes the employment situation for young individuals in the three countries studied. The second section focuses on the comparative analysis of questionnaire results, discusses the main findings, and provides a few recommendations. The third and final section concludes the analysis with key lessons from the study.

1. Literature Review

Over the past several decades, the ICT industry has experienced dramatic technological change that has contributed to economic and social development in countries around the world. In terms of employment, ICTs offer opportunities to increase workforce productivity and competitiveness. For instance, through several empirical studies, López-Bassols (2002) found a positive effect of ICT training on employment and, thus, on economic growth at the national level. The author found an association between new technological adoption and job organization which led to an increase in the efficiency of the production process and, thus, competitiveness. However, the increase in labor productivity opportunities provided by ICTs required that individuals have new knowledge and skills. Lack of adequate train-

ing, therefore, presented a significant barrier to competitive development in some countries and increased the economic and social gaps faced by marginalized groups.

Other empirical evaluations of ICT training programs suggest that these initiatives must include the participation of community actors where the training programs are implemented, as well as a role for intermediaries between users and technology (Cecchini, 2005).[3] In educational programs, key intermediaries are teachers who play an important role in the effective adoption of ICTs. The intermediaries that have proved to be useful when implementing ICT training programs are those NGOs that offer access and training to marginalized groups. Although the body of literature on this topic is not large, different empirical studies conclude that ICT training provided by NGOs has a positive effect on labor mobility for individuals with lower levels of education.

For instance, Karen Chapple (2006) interviewed graduates from ICT training programs offered by several NGOs in the United States and concluded that, in most cases, the training was successful in helping them find jobs. By tracking graduates, the author found that a large number of them found jobs and retained the jobs for an average of three years. Other assessments of ICT training by NGOs conducted by researchers at the Center for Information & Society support these results (Sullivan, Garrido, Dridi, Coward, & Gordon, 2007). The researchers found that the NGO is a significant nodal point within the labor development web, especially for workers who have lower levels of education and earn lower salaries.

In a study of youth from Eastern European countries, La Cava, Lytle, Kolev, and Clert (2005) identified the lack of ICT skills as a significant barrier to employment, as well as to launching micro-businesses. West and Garrido (2008) documented the experiences of several NGOs in five Eastern European countries. Through effective training, and

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2. When we refer to organizational tools, we are considering whether the infrastructure (hardware, software, facilities, etc.) is appropriate, if available resources are sufficient, if financing sources are diversified, if there are assessment procedures, if there are training courses for trainers, if there are graduate follow-ups, and if there are employment agencies for beneficiaries.

3. In Colombia, for example, when assessing a telecenter in the rural zone of Cauca, Amariles, Paz, Russell, and Johnson (2006) found that the poorest among the population did not have many opportunities to attain the benefits of these services. Telecenters reported by the study primarily supported individuals with relatively higher levels of education, and the use of ICTs only complemented their access to other communication media. The authors argued that the lack of a close relationship with the community probably led to those results.

with the close participation of the community, the NGOs were able to integrate young individuals into the labor market. The researchers noted, in particular, how involving young people in ICT projects led to the creation of labor experience, which is a key element in gaining employment. Furthermore, these projects served as a technological platform for young adults to develop their ICT skills, a basic labor market requirement.

Jacinto and Lusquiños (2007) evaluated the effects of *entra21: Preparing Youth in Latin America and the Caribbean to Enter the Modern Workplace,* an ICT training program that is part of the work carried out by the International Youth Foundation. The program was regional in scope; not only did it train poor young individuals, it also offered "bridge" assistance into the labor market. The assistance included internships and information about job vacancies and helped the participants establish a network. Jacinto and Lusquiños conducted an evaluation of the quality of the jobs secured by 389 graduates of the program. Through focus groups and interviews, the researchers found that the employment held by the graduates was, in relative terms, of higher quality than that held by individuals of similar age and social status who did not have ICT training. Moreover, the graduates' perceptions were that the ability to use ICTs in the workplace gave them personal satisfaction. The authors state, "Specifically, the knowledge acquired in ICTs, but also very especially in the level of development of personal attitudes related to the job, is considered a key for gaining entrance to their job" (p. 20).

Clearly, the process of labor mobility is not automatic. Lessons emerging from several studies on ICT training provided by NGOs suggest that a key variable for success is relevance. A study documenting the experiences of 25 NGOs worldwide concluded that ICT training must be relevant; that is, it must be significant to the individuals and to their communities, so as to reduce the social and economic obstacles the individuals face and to ensure that the newly acquired skills are put to use productively (Garrido, Coward & Gordon, 2007). Moreover, it is important to offer distinctive skills that give beneficiaries a head start in the context of a very demanding and competitive labor market. Finally, a further factor identified in these studies as contributing to successful NGO programs of ICT training

was the establishment of alliances between NGOs and other government and corporate organizations. These alliances promote consultation and provide potential sources of employment. Skills for ICT usage are not the only important variable, yet they create a differential component, providing stronger labor market opportunities for beneficiaries than those provided by generic job training.

These opportunities are greatly needed in the three countries under study. A recent comparative study on youth unemployment conducted in Brazil by the government research institute, Instituto de Pesquisa Econômica Aplicada (IPEA), revealed that Brazil had the highest percentage of unemployed youth across 10 countries, followed by Mexico, which had the highest percentage in 2000. Currently, in all three countries, most of the skills developed for using computer equipment are restricted to very general applications, such as word processors and spreadsheets. However, in Mexico and Colombia, 25% of users use specialized software focused on pedagogical functions. Additionally, a proportion of users say they have skills in programming packages and languages management (5% in Brazil, 21% in Mexico, and 28% in Colombia), which may be a reflection of market demand. (Instituto Nacional de Estadística Geografía e Informática [INEGI], 2008; Instituto Brasileiro de Geografia e Estatística [IBGE], 2008a; Departamento Administrativo Nacional de Estadística [DANE], 2008).

The skills acquired by Internet users are focused on general tasks, such as sending and receiving e-mails and participating in chat rooms (INEGI, 2008; Instituto Brasileiro de Geografía y Estadística [IBGE] 2008b; DANE, 2008). A survey conducted by Diálogo Regional sobre Sociedad de la Información (DIRSI, 2006) showed that more than 45% of the low-income population surveyed in Mexico did not use the Internet for accessing information about health, education, or government services. Results were similar for Colombia and Brazil.[4]

In light of the findings, the following sections provide a comparative analysis of six ICT training programs for youth in Brazil, Colombia, and Mexico. The analysis provides more empirically-based results and contributes to the current state of the literature on ICT training programs for youth in Latin America.

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4. See Mobile Opportunities' National Reports from Brazil, Colombia, and Mexico at: www.dirsi.net

2. Comparative Analyses

2.1. Introduction

Recently, greater understanding of the requirements for effective ICT use has led to the implementation of a second generation of ICT digital inclusion programs that go beyond offering connectivity. In Brazil, Colombia, and Mexico, where such programs have recently emerged, they are generally coordinated by NGOs. Using resources from different national and international entities, the programs provide ICT training to individuals with the aim of integrating them into the labor market.

The ultimate objective of the study underlying this article was to assess whether the ICT training provided by NGOs had an effect on the path to employment for low-income youth, helping them to search for and secure jobs, set up businesses, or improve self-owned businesses.

2.2. Research Design

This section explores the internal aspects of the NGOs studied and the external effects of their training activities. It looks into the organizational capacities of the NGOs, examining the effectiveness of their existing organizational tools and the adequacy of their available infrastructure (hardware, software, physical facilities, etc.). It also evaluates the following aspects of the NGOs: diversification of financial sources, assessment of programs for beneficiaries, provision of training courses for trainers, provision of follow-up activities for graduates, and the efficacy of employment agency activities for helping beneficiaries seek out and secure employment. This information allows us to assess the ways in which NGO community centers are organizationally prepared to assist the target population and, by consequence, fulfill the objective of increasing employment opportunities for marginalized groups.

To accomplish our objectives, we conducted a comparative analysis of six ICT training programs for young adults (two in Brazil, two in Colombia, and two in Mexico). The programs were offered by NGOs in Brazil (Oxigênio and the Rio de Janeiro chapter of the Center for the Democratization of Informatics [CDI-RJ]), in Colombia (Centro Juan Bosco Obrero, Teleton, and Cirec), and in Mexico (Partnership in Opportunities for Employment through Technology in the Americas [POETA] and CDI-Mexico). In Brazil, we evaluated the Center for Computer Recycling (CRC) program provided by the Oxigenio, in Guarulhos, State of São Paulo, and the pilot program CRIAR provided by the Rio de Janeiro state chapter of the National Association of Brazilian IT, Software, and Internet Firms (Associação das Empresas Brasileiras de Tecnología da Informação, Software e Internet [Assespro-RJ]), in cooperation with CDI-RJ.[5] Oxigenio manages a variety of government employment programs, as well as privately funded programs. CRIAR is an initiative established by an information technology (IT) services trade association from Rio de Janeiro. The association collaborated closely with CDI-RJ, which carried out the selection of participants.

In Colombia, we evaluated Centro Juan Bosco Obrero, which specializes in training people in the low-income community of Bolivar City in Bogotá, and Teleton and Cirec, which were created in the city of Bogotá to support training of disabled people for social and labor integration. The latter two organizations established POETA, which was developed by Trust for the Americas, an offshoot of the Organization of American States.

In Mexico, we evaluated the CDI, which has its headquarters in Brazil and is part of the program POETA. These two organizations work with local partners, civil society, or government entities. POETA has 10 centers throughout Mexico, two of which were selected for this study: the Training Center for Industrial Work (Centro para la Capacitación para el Trabajo Industrial [CECATI]), located in Azcapotzalco, Mexico City; and CECATI 65, located in Tlalnepantla, State of Mexico. CDI has 27 centers throughout Mexico. The Community Center in Gustavo A. Madero (also a CDI Mexico regional office) and the Santa Fe Community Center, both located in Mexico City, were selected for this study.

In the external analytic framework, surveys were conducted using three questionnaires directed to each of the following: beneficiaries, trainers at the community centers, and coordinators. During the survey, we conducted informal interviews with some, but not all of the beneficiaries. The interviews supplemented survey questions regarding bene-

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5. CRC is a federal government program launched in 2007 to promote computer recycling. Patterned after a similar Canadian program, it is managed by the Ministry of Planning, Budget, and Management. CRC is setting up several regional sites throughout Brazil.
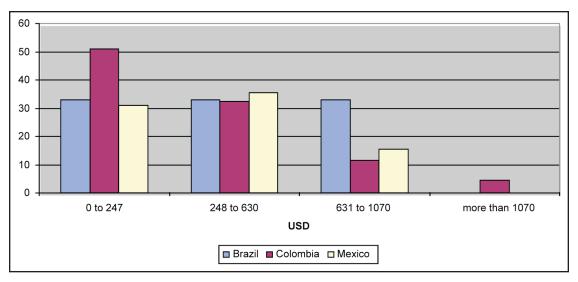
Figure 1. Beneficiaries by family income level (%).
Source: Authors' elaboration from national case interviews.

ficiary perceptions of the effects of the training acquired.

The questionnaire for beneficiaries consisted of five sections. The first section concerned the socio-economic characteristics of beneficiaries (i.e., age, gender, income, and schooling). The second section, the core of the research, focused on the ICT training program (e.g., length of program, personal perceptions of program usefulness). The third section concerned the degree of marginal digitalization by the respondent. The fourth section looked at the use of ICTs and the places they are typically used. The fifth section addressed recommendations for future training courses. Based on the results of both internal and external analysis, this section presents an overview of the physical and human resources available and identifies the individuals' perceptions of target compliance.

The beneficiaries were mainly young people taking ICT training courses in NGO centers and those who had already finished ICT courses during the last year. The field study consisted of 106 interviews with beneficiaries: 16 in Brazil, 45 in Colombia, and 45 in Mexico. Interviews were conducted using a standardized questionnaire. The first section of the interview collected information on the beneficiary's socioeconomic characteristics. The second section

identified the ICT training received by the beneficiary, as well as the beneficiary's personal perceptions about if and how the training had an effect on multidimensional aspects of his/her life. The third section sought to determine the level of digitalization acquired by the beneficiary. The fourth section focused on the beneficiary's perceptions about the level of appropriateness of the center's facilities and potential improvements for the program.

2.3. Socioeconomic Background of Beneficiaries

The main beneficiaries of the ICT training programs in Colombia and Mexico come mostly from low-income groups, whereas in Brazil, the programs cater more to the lower middle class and less to lower-income populations (see Figure 1).[6]

There are also important differences in the educational levels of students across the three countries. In Brazil, more than 50% of beneficiaries are concentrated on secondary school education; however, a few individuals have completed postgraduate studies. In Colombia and Mexico, a higher percentage of beneficiaries are high school graduates.

2.4. ICT Culture

To assess the participants' digital culture, their access to different ICTs was measured on a daily basis.

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6. In Brazil, this is partly due to the fact that, with rising incomes and formal employment, low-income groups have been moving up on the social scale, as measured by consumption patterns.
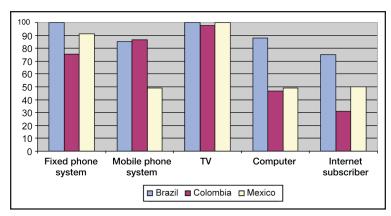
Figure 2. Beneficiary level of access to ICTs (%).
Source: Authors' elaboration from national case interviews.

In the three countries, most of the beneficiaries have access to television and to fixed telephone where penetration level is substantial, reaching 100% in Brazil, 91% in Mexico and 77% in Colombia. Regarding more recently adopted technologies, such as mobile phones, computers, and Internet, Brazil has high levels of penetration, whereas Mexico and Colombia (except for mobile phones) have lower penetration rates of 50% among beneficiaries from programs (see Figure 2).

In the three countries, the plurality of the beneficiaries are students (25% in Brazil, 60% in Colombia, and 35% in Mexico), followed by people who work (19% in Brazil, 24% in Colombia, and 27% in Mexico). It is interesting to note that, in Brazil, there are beneficiaries who study and work at the same time, and there are no beneficiaries whose primary occupation is housework. In Mexico, by contrast, the percentage of beneficiaries whose primary occupation is housework is quite similar to the percentage who work. In all three countries, the unemployment rates for beneficiaries are very similar: approximately 10% each.

2.5. Organizational Structure and Skills Provision

The NGOs in the study offer a wide range of courses, although most focus on elementary knowledge and skills. The courses cover mainly basic computer applications such as spreadsheets, word processing, and presentation software. Though they provide a good foundation, these courses should be supplemented with higher-level training. There is

less demand, however, for courses such as webpage design, managing, and accounting.

Undoubtedly, the knowledge and skills students gain in basic computer classes is useful, particularly in jobs requiring passive, repetitive tasks (e.g., call center attendant). Some students, in fact, are able to develop their own businesses, even though the training is not explicitly directed toward helping them do so. For instance, in Colombia, two unemployed beneficiaries used their recently acquired ICT knowledge to work periodically for third parties on activities such as completing online curricula vitae (CVs), elaborating CVs using word processors, or helping students who either do not have computer skills or lack access to computers. In Brazil, a few beneficiaries began a business of installing software and hardware systems in their local community, where rising incomes and better lines of credit have prompted low-income people to acquire their first computers. Still, the relationship between ICT training and entrepreneurship goes well beyond ICT usage, and NGOs do not have trained staff that can support beneficiaries in business development activities. Nevertheless, beneficiaries value the training they receive. In Mexico, as well as in Colombia, the majority of beneficiaries wish to continue their ICT training, either to acquire more advanced computing skills or to develop a deeper knowledge of basic applications.

Beneficiaries were asked if the skills they acquired were useful in the labor market. In each country, the skill considered most useful was searching for, analyzing, and using information (see Figure 3). In contrast to skills related to information management, beneficiaries perceived less value in basic computer skills. This response was surprising, given the high demand for basic computer training. It may, however, reflect the fact that such training is a prerequisite for more advanced courses.

2.6. Job Skills

Across the three countries, the percentage of beneficiaries currently seeking employment is highest (75%) in Brazil (see Figure 4). In Colombia and Mexico, the percentages are significantly lower. The

Perception on managing follow-up skills	Mexico %	Colombia %	Brazil %
Analyze, extract and use information	22.2	16.7	25
Perform electronic searching	13.3	8.3	6
Knowledge of electronic sources and skill in selecting the most appropriate sources	11.1	5.6	0
Organize and classify information	8.9	2.8	19
Use word processing, e-mail, and/or Web page design tools.	6.7	14.6	6
Learn to use tools and software taught during courses	8.9	5.6	13
Understand nature and location of information on a global and local scale	4.4	25	0
Become familiar with computing terminology, software and hardware operation, equipment maintenance, basic programming concepts	2.2	13.6	31
Use analytic and statistical software	4.4	2.8	0
Use spreadsheets and graphs to present ideas	4.4	2.8	0
Determine efficiency of new methods in comparison to traditional methods	4.4	2.8	0
Communicate and/or publish ideas using electronic word processor, e-mail, and/or Web page design tools	0	13.9	0

Figure 3. Beneficiary Perceptions of Value of Skills Acquired (%).

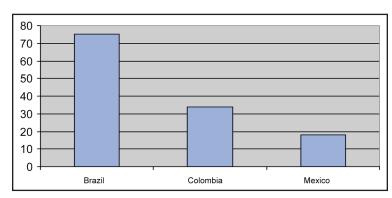*Source: Authors' elaboration from national case interviews.*

rates of unemployment for survey respondents were higher than the national unemployment rates in the three countries, which average about 10%. It may be that beneficiaries are seeking new competencies to meet specialized labor market demands.

In the three countries, all beneficiaries who sought and found jobs considered the knowledge obtained from training to be an important factor in being hired. In Brazil, nine out of 12 beneficiaries searched for jobs after finishing their courses (four were already employed), as did 15 in Colombia and eight in Mexico. Asked if they had applied the knowledge acquired through training in their new jobs, one out of three beneficiaries hired in Brazil, four out of six in Colombia, and four out of seven in Mexico answered affirmatively. Surprisingly, the beneficiaries who obtained jobs think the ICT courses are helpful in obtaining employment, even though they are not using the knowledge in their new jobs in any significant manner. The number of graduates who become micro-entrepreneurs is higher in Mexico than in Brazil or Colombia. Among beneficiaries who do set up businesses involving their new ICT skills, Internet use is high.

2.7. Social Skills into Economic Opportunities

Survey results indicate that beneficiaries who graduated from the ICT programs value the training and their new technological capabilities highly. Beneficiaries in Brazil, Colombia, and Mexico perceive that ICT skills help them develop social and personal opportunities and contribute to seeking economic prospects. Social opportunities are related to the capacity to help friends and relatives perform tasks that require computer and Internet skills (e.g., maintaining hardware and software, searching for information, preparing electronic documents and presentations). As Maria Teresa, a graduate of the Santa Fé program in Mexico City, states:

Courses have helped me a lot; now, I help my daughters with their homework. I can get the information they need to do their work, and I am teaching both of them to use the computer. I can also get in touch with my father, who lives far away, and it doesn't cost anything.

Figure 4. Beneficiary Unemployment (%).

Source: Authors' elaboration from national case interviews.

Last month, we bought a made-by-part computer. It cost us $1,500 pesos. It's a struggle for us to pay that much; my husband makes very little money. But, anyway, I was already spending $100 pesos a week at the Internet-Coffee Shop. We think it's very useful and worth the effort. At nights, I teach my husband how to use it. We're all very excited about the new computer and the Internet. Some days ago, I was able to find the address and schedule for the museum we had to take our girls to. I feel very useful teaching my family how to use the computer.

When I finish prep@net and my daughters are a little older, I want to get back to work, but now I can get a better job as a secretary. It won't be the same as before, because now I know how to use the computer and e-mail. I think I'll be able to help my husband buy a house for my daughters.

Beneficiaries feel personal satisfaction about having acquired the knowledge to use some computer applications and about being able to do school work. They also feel a sense of "personal improvement." The beneficiaries seek economic opportunities in various ways by conducting Internet job searches, studying for courses and creating CVs online, performing computer maintenance and repair, and helping others search for information online. Some of the more technology-savvy beneficiaries and their teachers realize that their acquired ICT skills allow them to enter the workforce on a potential career track and with greater possibilities for advancement than would otherwise be possible for young individuals. As a beneficiary of the Assespro/CDI Project Criar in the city of Río de Janeiro aptly puts it:

I have been working at an EIC [Citizenship and Informatics Center] at the Caçapava community in Grajaú [a northern, low middle class neighborhood of Rio de Janeiro] as an informatics instructor for one year. . . . Besides the class, where I get to replicate what I'm learning, I also have other expectations. First, the course I am taking gives me the opportunity to obtain a specialization I don't have. Next, the possibility of getting a job in the area is very good, because the course is being taught by a trained professional and provides knowledge that is specific to the needs of the firm that purchases the application software, which was the object of the course. (Soares, 2007)

Moreover, in some cases, graduates have been able to translate their newly acquired confidence

into concrete business opportunities. For example, in La Pila, a town in the Cuajimalpa area of Mexico City, Edgar opened a cybercafé in a semi-urban zone with few technology resources where he had identified an unsatisfied connectivity demand. The cybercafé is located on the main street of the town in a room about 12 square meters in size with a cement floor. Inside are five computers with Internet access, a scanner, and a color printer. The business is profitable, but Edgar thinks it has the potential to be even more successful if he can attract more customers. He believes it is only a matter of time before the cybercafé becomes more well-known around the community. As Edgar puts it:

I was always interested in starting my own business, but I did not have the courage to take the chance. The course helped me to take that big step, to decide to do it. Now, I have my own business; I am happy to be working.

Now that I am here at my cybercafé, I feel very pleased, proud of myself. My self-esteem has improved, and I feel more capable. There still are not huge economic profits—I opened it just two months ago—but I think we can do just fine.

Besides having my own business, I love the fact that I'm able to help people not be afraid of a computer, to use all the different programs and to communicate through e-mail.

My family is very happy and proud of me being independent.

Edgar is not a typical student in the sense that the ICT programs do not often produce entrepreneurs. He is typical, however, in that he has acquired concrete skills, self-confidence, a broader social network, and a new set of tools to improve his livelihood.

Nevertheless, participants' positive perceptions and high expectations do not always translate into employment. Community centers still need better strategic and organizational skills for designing, implementing, monitoring, and learning from programs and individual experiences. Some of the main challenges facing centers are related to the need to strengthen the training process, widening it beyond technical learning, as well as supporting the integration of participants into the labor market.

3. Recommendations

A few normative suggestions emerge for addressing these challenges. First, in general, the ICT training curricula of NGOs covered by the study offer little in
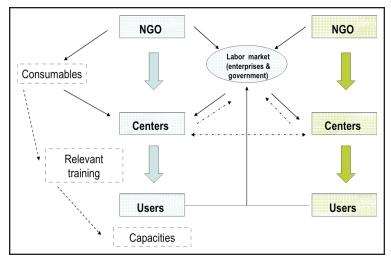
Figure 5. Centers' relationships with relevant actors.
Source: Authors' own elaboration (2008).

include student data, course attendance, and students' perceptions of their needs and expectations, both before and after training.

Second, to support integration of participants into the labor market, each NGO center should have an executive coordinator with a clear vision of the ICT requirements of the labor market. In addition, the executive coordinator should have expertise in the following areas: establishing partnerships with companies, creating agreements with local governments, collaborating with NGOs focused on employment and entrepreneurship programs for low-income youth, and ensuring compliance with training objectives. The executive coordinator also must have a good knowledge of the center's organizational competencies and skills, as well as a network of business contacts.

In most of the cases studied, the NGO centers failed to create and consolidate alliances with key community actors. They also failed to obtain sufficient company participation when attempting to strengthen community center employment agencies. All NGO partners should collaborate to identify employment or self-employment targets for beneficiaries, as well as capacity-building strategies for reaching those targets. ICT training should identify and provide linkage among enterprises requiring a certain profile, and/or ICT training for enterprises in general, and/or carrying out entrepreneurial activities. Figure 5 shows key relationships that NGO centers should maintain with their parent NGOs; with other, similar centers and NGOs; and with the business sector.

It is also necessary to reevaluate how international entities have been supporting NGOs in Latin American countries. Initial financial support is clearly valuable because it allows the creation of programs. However, the sustainable and scalable success of these programs requires a somewhat longer and more continuous model of support.

Public policy also plays an important role. There are several government, private, and NGO initiatives directed toward promoting access to telecommunication services for marginalized groups. However,

the way of business or entrepreneurial competencies. Emerging opportunities for ICT-related business suggest the need to offer both entrepreneurial skills to beneficiaries and internships to the most promising students from the courses. The NGOs should implement training programs specifically focused on entrepreneurial knowledge, such as business development, product-dependant marketing strategies, market types, etc.

For instance, there is an increasing demand in several countries of the region for software services employees, either in program coding or in specialized software operation (enterprise resource planning, billing, human resources, etc.). Companies in various industries, including micro-, small-, and medium-size enterprises, have started adopting ICTs as costs for Internet and communication services and IT equipment have begun to decrease. For example, Brazil has recently experienced an increase in computer ownership and use, along with smaller progress in Internet access by low-income segments of the population, partly as a result of the government program "Computers for Everyone," which finances low-cost computers. This has created numerous opportunities in low-income communities for development of ICT-related businesses, such as local area network houses, hardware maintenance, and software installation.

The NGOs should develop databases to monitor the professional paths and labor market performance of beneficiaries. Information collected should

these efforts are rarely coordinated, which leads to duplication of effort without leadership. Regional governments can provide leadership and coordination by disseminating information about different initiatives and by contributing tools and resources for creating alliances among NGOs and between NGOs and private companies.

4. Key Lessons

ICT training programs offered by NGOs for integrating young individuals into the labor market represent a significant improvement over the previous generation of digital inclusion efforts. The programs go beyond connectivity and incorporate a more sophisticated and better-grounded view of effective ICT use. The cases described previously show that these programs have added important capacity-building modules to support labor market integration (e.g., CV writing, interview behavior, etc.) and have also set up employment databases. Some have even targeted training toward ICT requirements for specific job openings, such as vertical software applications for medium-size enterprises.

Program graduates perceive that the training allows them to reduce social and economic obstacles to employment. Also, beneficiaries indicate that the skills acquired are empowering—they open new opportunities for teaching others, seeking employment, and increasing self-esteem.

Still, the NGO initiatives remain relatively small and fragmented. More importantly, they are still tethered to many of the assumptions of first-generation programs that focused largely on providing generic ICT skills without addressing the social skills needed for entering the labor force or the specific requirements for existing ICT positions. In addition to basic ICT courses, NGOs need to provide continuous capacity building that affords beneficiaries greater opportunities for entrepreneurial success and gives them an advantage in competing for available jobs.

Along the same lines, emerging programs continue to take a rather limited approach to building alliances, partnering mainly with nearby companies in the community. They also lack sufficient understanding of ICT job requirements and, consequently, of the training needs of beneficiaries. The labor market extends well beyond community boundaries and is more demanding and complex in terms of job requirements. Moreover, program alliances with other NGOs for capacity building are often generic in nature and do not generally address the labor market's particular ICT demands.

The NGOs that participated in this research do not have specialized or dedicated staff for establishing and coordinating alliances with companies or with other organizations with similar youth employment goals that can provide complementary training and support. Thus, strategies and processes are needed for developing closer and more participatory relationships between and among centers, NGOs, and organizations with complementary resources. The relationships should be geared toward sharing information, setting up common alliances and incentive systems, and jointly establishing links with different industries (companies and associations) and institutions (governments and civil society) to promote internship creation, the hiring of beneficiaries, and support for program sustainability efforts.

Finally, international organizations that wish to support NGOs in providing ICT training initiatives must be aware that the support must go beyond program start-up costs and donations of software and equipment. NGO efforts to help integrate marginalized youth into the labor market require closer collaboration with international entities in designing programs, sharing successful experiences, and supporting the creation of alliances. ∎

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