Connecting people for development: Why public access ICTs matter

Executive Summary

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ABOUT THE GLOBAL IMPACT STUDY

The Global Impact Study of Public Access to Information & Communication Technologies was a five-year project (2007-2012) to generate evidence about the scale, character, and impacts of public access to information and communication technologies (ICTs). Looking at libraries, telecenters, and cybercafés, the study investigated impact in a number of areas, including communications & leisure, culture & language, education, employment & income, governance, and health.

Implemented by the University of Washington's Technology & Social Change Group (TASCHA), the Global Impact Study was part of *Investigating the Social & Economic Impact of Public Access to Information & Communication Technologies* — a broader CAD$7.9 million research project supported by Canada's International Development Research Centre (IDRC) and a grant to IDRC from the Bill & Melinda Gates Foundation. Managed by IDRC, this project included the *Global Impact Study of Public Access to Information & Communication Technologies* (this project) and *The Amy Mahan Research Fellowship Program*, led by Universitat Pompeu Fabra, which aimed to deepen the capacity of emerging scholars with the goal of increasing the quality and quantity of research on public access to ICT produced in developing countries.

TECHNOLOGY & SOCIAL CHANGE GROUP

The Technology & Social Change Group (TASCHA) at the University of Washington Information School explores the design, use, and effects of information and communication technologies in communities facing social and economic challenges. With experience in 50 countries, TASCHA brings together a multidisciplinary network of social scientists, engineers, and development practitioners to conduct research, advance knowledge, create public resources, and improve policy and program design. Our purpose? To spark innovation and opportunities for those who need it most.

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RESEARCH SUPPORT

ABSTRACT

Libraries, telecenters, and cybercafés play a critical role in extending the benefits of information and communication technologies (ICTs) to a diverse range of people worldwide. However, their ability to contribute to development agendas has come into question in recent times. The Global Impact Study was designed to address this debate by generating evidence about the scale, character, and impacts of public access ICTs in eight countries: Bangladesh, Botswana, Brazil, Chile, Ghana, Lithuania, the Philippines, and South Africa. This report summarizes the study's key findings, situating public access in the context of national development, discussing some disputed issues, and providing recommendations for policymakers, public access practitioners and researchers. The results show that a central impact of public access is the promotion of digital inclusion through technology access, information access, and development of ICT skills. Both users and non-users report positive impacts in various social and economic areas of their lives.

SUMMARY

Libraries, telecenters, & cybercafés play a critical role in extending the benefits of ICTs to a diverse range of people worldwide.

KEYWORDS

cybercafés, libraries, telecenters, ICTD, ICT4D, digital inclusion, e-Skills,, public access, e-Inclusion, impact, open research, open data, information access, infomediaries, mobile phones, Bangladesh, Botswana, Brazil, Chile, Ghana, Lithuania, Philippines, South Africa

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Technology & Social Change Group

Executive Summary

The summary of the full report, *Connecting people for development: Why public access ICTs matter*, presents the first results of the *Global Impact Study of Public Access to Information & Communication Technologies,* a five-year project (2007–2012) aimed at generating evidence about the character and impacts of public access to information and communication technologies (ICTs). Looking at libraries, telecenters, and cybercafés, the study investigated impact in a number of areas, including Communications & Leisure, Culture & Language, Education, Employment & Income, Governance, and Health.

Background

Millions of people around the world rely on public access venues — libraries, telecenters, and cybercafés — for computer and internet access and services. Whether to obtain health information, learn computer skills, communicate with friends and family, or play games, public access venues enable people to participate in the information society. Most of these venues are commercial: internet cafes, LAN houses, and other types of paid access that are referred to in this summary and full report collectively as *cybercafés*. Many others, especially in rural and other underserved areas (and typically falling in the category of libraries and telecenters), are supported by governments and development agencies, based on the rationale that having the skills and means to access computer and internet technology is essential to development in a world increasingly dependent on online resources. As these investments continue to grow, questions are being raised about their impact, particularly:

- What are the social and economic impacts of public access to ICTs?
- What is the magnitude of these impacts, and how can they be measured?
- What is the relationship between the costs and benefits of providing — and using — public access ICTs?

The Global Impact Study investigated these questions in eight countries, representing a diversity of socioeconomic settings within the spectrum of low and middle-income countries: Bangladesh, Botswana, Brazil, Chile, Ghana, Lithuania, the Philippines, and South Africa.[1] A range of survey, ethnographic, and experimental research approaches were employed, including: structured inventories of public access venues in six countries; nationwide general surveys of public access venue operators, users, and non-users in five countries; and in-depth case studies on specific topics in eight countries. In addition to positive impacts, the study attempted to capture negative impacts as well as the absence of impacts. Special attention was given to exploring the impacts on the specific populations (e.g., lower

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[1] The full report covers seven of these countries. Data from the eighth country, Botswana was not available for the report and will be released separately.

socioeconomic status, females, youth, elderly, and rural residents) and domains (e.g., Health, Employment) that tend to be the target of international development efforts.

Recent global poverty data show that the majority (70%–80%) of the world's poor now live in middle-income countries (Sumner, 2012). The Global Impact Study findings confirm that public access ICTs are an important component of the broader ecology of information and communication resources available in the countries studied – of which all but Bangladesh are classified as middle-income countries by the World Bank. As developing or emerging economies, these countries are all pursuing national development agendas which include the common goal of leveraging the benefits of the information society for all their citizens. All have some level of appreciation for the role that public access ICTs could play in pursuing these agendas. However there is some turmoil: In many countries, the public access sector is vibrant, with a persistent cybercafé market, continued support for existing public programs, and new programs being launched. In other quarters, especially among development agencies, interest in public access has waned considerably, largely due to changes in the field of information and communication technologies and development (ICTD), even since the inception of this study in 2007, which have raised questions about the effectiveness, or long-term relevance, of public access ICTs in development strategies.

An early understanding of the ICT landscape viewed public access as merely an intermediate step on the road to the ultimate goal of private access. The research findings support a more nuanced understanding: public ICT access can function both as a (sometimes temporary) substitute for private access, but also as a (potentially permanent) complement to private access. Careful examination of the public access phenomenon in context can identify conditions that facilitate use and impact. This information can yield important insights to inform venue placement, design, services, rules, and other facets of public access operations, as well as the targeting of facilities to specific domains and populations. Although some of the results presented in the full report analyze differences in the impacts of public access between countries, the research is structured to go beyond national comparisons to analyze variables across categories of user populations, domains of impact, and types of public access venues. Those who make use of this research need to be able to situate their own countries or interests within the range of contexts presented here.

Significance of public access ICTs in the developing world

The eight countries in the study represent diverse infrastructure and usage environments. In terms of private ICT access, Bangladesh, Botswana, and Ghana are the least resourced (with 3-6% of the population having internet access at home). Lithuania, Chile, and Brazil are the best resourced (38-62% home internet access); and the Philippines and South Africa fall in the middle (10-15% home internet access). Yet each country has an active public access landscape, patronized by individuals both with and without private access to ICTs. In each country, public access remains relevant to different populations for different reasons – for some it is the only source for computer and internet access, therefore critical at a most foundational level; for others the equipment at public access venues are more suited than home or work access for certain tasks; and for yet others, the social space at public access venues is more important than the technological resources. This demonstrates that the value of public access ICTs is not limited to countries with very low levels of digital connectivity. Public access is equally important in higher connectivity countries, supporting multiple modalities of access, and ensuring that marginalized groups can access the resources to join the information society. There is reason for both widespread and strategic support for public access availability in low and middle income countries.

On the other hand, public access ICTs can be understood to have varying significance in each country. The specific shape of the public access sector, and the roles that venues play differ from one context to another, depending on overall levels of connectivity, history of access and familiarity with ICTs, presence of different models of public access, extent of public access use (current and historical), as well as public policies. For example, in countries with low connectivity, public access can stimulate individual curiosity, provide an initial ICT experience and support new users to develop long-term digital skills. Users in Bangladesh and Ghana (countries with low national connectivity) are especially reliant on staff assistance. They reveal that in the absence of public venues their use of ICTs would decline more precipitously than that of users in the other surveyed countries.

While all venue models have value, findings from Bangladesh and Chile illuminate the critical role of publicly/donor-supported venues. Nearly half of survey respondents in Bangladesh use staff assistance every time or most times they visit a public access venue, and in rural areas, public access would be unavailable for most without the presence of telecenters. In Chile, the widespread availability of libraries with high quality public access services translates into a significantly higher valuation of public access in libraries by users *and* non-users (compared to cybercafés and telecenters). Conversely, in countries like the Philippines whose citizens are active members of the overseas workers community, cybercafés help to bridge the communication gap, facilitating social cohesion by keeping families connected. Likewise, in Brazil and South Africa, although users have alternative forms of access to ICTs (home internet access in Brazil, mobile internet access in South Africa), both libraries and cybercafés support specific user needs by addressing technological and other limitations of existing private access. In Lithuania, while cybercafés are a dying breed due to increased home internet access, libraries continue to thrive suggesting that they meet unique user needs and have greater staying power.

Based on all indicators to date, it can be said that many low and middle-income countries are at relatively early stages of ICT penetration. Moreover, the rates of adoption are not comparable to those seen in advanced economies in the past two decades. It may take decades for some countries to reach high levels and quality of home connectivity, thus, **public ICT access will remain a critically important service**, and as discussed above, is likely to continue to have relevance even when higher connectivity has been achieved. Finally, some of these countries may be developing their own distinctive modalities of ICT use, reflecting cultural norms, communal attitudes, or practical considerations. These modalities may emphasize the value of rationing use, sharing workstations, or learning collaboratively, for instance. Both of these trends – the rate of adoption and emergence of distinctive modalities – need to be monitored over time, for governments, donors and private investors to adjust policies to the changing needs and practices in the public access landscape. Critically, the broader national environment needs to be addressed in parallel with the rollout of public access, to enable this resource to deliver expected results.

The findings and conclusions of the study are discussed in more detail below.

What are the social and economic impacts of public access to ICTs?

The research shows that public access has a variety of impacts, including first-order effects (digital inclusion) and second-order effects (social and economic impacts).

Digital inclusion is the fundamental first-order effect of public access provision and use. As computer and internet technologies are increasingly crucial resources for functioning in today's society, it is generally accepted that populations lacking access to ICTs are disadvantaged in the global economy. The digital inclusion impacts of public access enable populations to overcome limitations (such as poverty and lack of digital skills) that hamper their ability to access and make productive use of ICTs.

The study identified three levels of digital inclusion from the data. *Technology access* refers to the expansion of physical access to computers and internet technology. The data show that, for large portions of society, this goes to the heart of the value they attach to public access. The study found that 48% of users surveyed identified lack of access to ICTs as their main reason for patronizing public access venues (33% for the internet and 15% for computers); and over 50% said that their use of computers would decrease if public access venues were no longer available. For many, public access also provided their first encounter with computers and the internet. Considering that a large proportion of public access users are under 25 years old, this finding suggests that, for a large number of young people, their upbringing includes public access ICT venues. *Information access* flows from technology access, as computers and the internet are gateways to a wealth of information, including education, entertainment, and employment and business opportunities. The data show that users take advantage of public access venues to retrieve information that might not otherwise be readily available to them, and over 90% of respondents looking for information usually found what they were looking for. *Development of ICT skills* is a critical third impact area of public access, both through providing training and support services and by providing a space for hands-on exploration of digital technologies. A majority of users said that public access venues were the most important places for development of their computer (40%) and internet skills (50%). Finding an environment that is responsive to their level of need for support in using ICTs was an important factor for both novice and experienced users. In several cases, the proportion of users identifying these digital inclusion benefits was higher for people of lower socioeconomic status (based on personal income and educational level).

Social and economic impacts are the second-order effects of providing digital inclusion through public ICT access. From the perspective of users, using computers and the internet at public access venues delivers benefits that touch on multiple aspects of their livelihoods, including Culture & Language, Education, Employment & Income, Governance, Health, and Communications & Leisure. Over 50% of surveyed users reported positive impacts in their *communication with family & friends, meeting new people, education, time savings,* and *access to employability services.* Similarly, 25%–40% experienced positive impacts on *financial savings, access to government information & services, local language & culture activities, income,* and *sending or receiving remittances.* In every area of activity, it is clear that the availability of public access enables users to participate in aspects of personal, social, economic, and civic life that are important or relevant to them.

These impacts are not limited to users who depend on public access for ICTs. The evidence shows that former users, and people who have alternatives to public access, also enjoy these benefits. Former users indicated that public access had been important to them in the past: for 28% as their first use of a computer, and for 35% as their first use of the internet. This past use evidently provided preparation for participation in the information society through private ICT access. Moreover, people with other means of accessing ICTs (at home or work, for example) still found compelling reasons to visit public access venues, such as for better equipment or other resources. Finally, non-users reported that the use of public ICT access by their family and friends indirectly benefited them as well, in a broad range of areas. Ten percent had asked someone else to use a venue on their behalf in the past, and more than two-thirds (68%) reported positive impacts from their family/friends' use of public access — especially in the areas of *maintaining communication with family & friends* (63%), *education* (51%), and *meeting new people* (45%). Although direct users were more likely to report positive impacts, such indirect uses and outcomes are not inconsequential.

Overall, the indications of negative impacts were relatively limited. The most prominent related to financial and time expenditures (reported by 10%–20% of survey respondents), perhaps reflecting the cost in time and money of using public access venues.

In essence, public access enables change in personal, social, economic, and other realms of life, by providing the technological and human tools (basic or advanced) that open up the information society to individuals. Public access supports the development of the knowledge and skills needed to navigate the digital world, and through that the real world. Public access provides users with benefits in a variety of ways: supporting communication and social interaction; supporting information-seeking on diverse topics; supporting service-seeking in multiple areas of the economy; improving efficiency and reducing transaction costs to get things done; and supporting the pursuit of leisure activities.

What is the magnitude of public access impacts?

The second topic of interest to the Global Impact Study was the extent of the impacts of public access: How big are public access impacts? How can they be measured? The approach adopted was to measure magnitude of impact by the percentage of people experiencing a particular impact in a particular area, noting whether it was positive or negative, or non-existent. This, in researchers' judgment, was more feasible than trying to obtain a numeric measure of the change in a particular area of an individual's life as a result of using public access. The survey results show that the magnitude of public access impacts varies depending on the population and the domain involved.

Public access impacts, in that respect, are not judged as big or small, but rather as either broad-based and cross-cutting or targeted. In some areas, public access impacts were quite expansive, spanning all sections of the population — young and old, urban and non-urban, male and female, employed and unemployed, and so on. This especially related to the Education and Communications & Leisure domains, where over 80% of users, and over 50% of non-users, indicated positive impact from their own use or their family/friends' use of public access. In other domains — Culture & Language, Employment & Income, Governance, and Health — public access impacts were more narrowly focused on specific populations (e.g., health issues for older populations). For these populations, too, the impacts were overwhelmingly positive.

The research into specific goals that users pursue at public access venues found very high levels of goal achievement, indicating that the resources available at public access venues are effective in enabling users to do the things they want to do. A self-assessment showed that over 90% of users reported overall success in meeting their goals (searching for information, finding information, and taking action or experiencing some result).That is not to say that public access venues are perfect in their service delivery; the study cannot discount the influence of users' own motivation and personal abilities, neither can it determine whether users are justified in believing that they have achieved specific goals.

The study also compared non-users' perceptions of positive (indirect) impacts from public access usage versus impacts from their (direct) use of other alternatives for information and communication. The results suggest that having *direct* access to ICTs and related resources makes a difference. Non-users experienced positive (indirect) impacts from public access at a lower rate than positive impacts from their (direct) use of other types of information and communication resources.

What is the relationship between the costs and benefits of providing, and using, public access ICTs?

The study aimed at evaluating costs and benefits from the perspective of both public access service providers and public access users. Because of the difficulties of collecting reliable cost data from public access venues, the results on the user perspective are more reliable. Using the travel cost methodology, the study captured the value users place on public access in terms of the amount they pay to reach a public access venue. In purchasing power parity terms, this amount ranges from annual expenditures of

$15 [2] in Ghana to $83 in Brazil. It appears that *any* form of access trumps the features of any particular public access model: where users do not have a variety of options, they are prepared to pay to travel to whatever is available (library, telecenter, or cybercafé). However, it is notable that in Chile and the Philippines, libraries were more highly valued than other venue types, as users were willing to spend more to reach a library than a cybercafé. An in-depth study in Chile provided confirmation: both users and non-users voted their highest support for libraries by indicating a willingness to pay about $49 to keep libraries open, compared to $16 for telecenters and $7 for cybercafés.

Yet another lens applied to derive an indication of the social value of public access was to compare the extent to which non-users of public access would be willing to pay to keep public access available to people *other than themselves*. The results point to an extensive reach, as non-users in the five survey countries indicated willingness to pay ranging from $2 (Bangladesh) to $101 (Philippines) to keep public access venues open.

Contextualizing public access impacts

The detailed findings on public access to ICTs lead to some general conclusions about the role, impacts, and long-term potential of public access.

1. Is public access still relevant?

The evidence suggests quite clearly that public access venues play a critical role in extending the benefits of ICTs to large sections of the population, despite the expansion of mobile telephone access. The vast majority of public access users in fact possess mobile phones, but this form of private access does not appear to have lessened the importance of public access venues. A survey of youth mobile phone users in South Africa found that they also value the affordances provided by public access venues. Public access is part of a broader ecology of information and communication resources. In addition to mobile phones, people meet their information needs variously through TV, radio, and print materials, as well as directly from health professionals and others, navigating the range of options in ways that best meet their needs. Public ICT access is remarkable for its staying power and lasting significance.

2. Is public access to ICTs a substitute or a complement to home access?

A large number of public access users do have computers and internet connections at home. In Brazil, for example, the internet penetration at home among venue users was 40%, compared with the 24% national average (in 2009). In Chile, one-third of public access users had internet connections at home, as did about one quarter of users in Ghana and the Philippines. What attracts people to public access, even when they can use ICTs from the comfort of their home? Users cited several reasons: better equipment, faster connections, access to infomediaries and peers either for help or a sharing experience, competition from home members, the benefits of socialization, and more. On the other hand, data from the non-user survey show that about 75% of former public access users stopped going after they gained private computer and internet access (not mobile phone based).Thus, while some individuals stop using public

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[2] All financial data in the full report is expressed in $USD.

access venues as a result of private access, a large number of people with home access are also regular public access users.

3. Uses and impacts by priority populations

The goal of most public and donor funded initiatives is to reach specific priority populations which are perceived as disadvantaged in some way: low socioeconomic status, unemployed, at-risk youth, rural residents, minorities, women, etc. This study therefore focuses on these groups. The study found that, in most instances, their experiences inside public access venues are on par with their more advantaged counterparts. At the same time, the evidence indicates that most public access users are of middle socioeconomic status, urban, male, and young. This fact is often raised as a point of criticism. However, a strong case can be made that expanding public access to ICTs for all demographics will benefit a country over the long term, especially when enhanced with such services as ICT training, distance learning, and job placement. Indeed, the relative youth of public access users is of key importance, since the youth are a critical resource for national progress. From another perspective, for young people public access venues may provide a safe and supportive environment to engage with technology and each other.

4. Uses and impacts in priority domains

Most public and donor initiatives promote the use of public access facilities for specific domains such as Education, Governance, and Health. These are considered "productive" uses, in contrast to more casual uses such as Communications & Leisure. The data confirm that activities in the Communications & Leisure domain in fact dominate public access usage, both in numbers of people and in frequency. This trend is generally seen as a failure of public access to promote desirable user behavior. However, while the high popularity of some activities may signal high importance, low popularity does not similarly signal low importance. Accessing critical health information is likely quite important to those who use public access for this purpose, even if they are few in number. Neither can frequency of use be equated with importance. A more appropriate gauge may be whether an activity is *routine* or *episodic*. Routine uses are those pursued in nearly every visit to a public access venue, such as online communications and leisure activities. Episodic uses are activities that are pursued occasionally, whether a few times per year (e.g., accessing government services) to less frequently (e.g., looking for a new job).

This understanding of usage patterns helps to contextualize the large proportions of "no impact" responses reported in the project surveys, which represented the respondent's non-use in the specific domain. Non-use appears to be related to whether a particular area of activity was relevant to the user, or was even feasible in the user's context.

Finally, the findings of this study challenge the notion that communications and entertainment activities are frivolous and do not lead to productive outcomes. The results show that people may accomplish instrumental tasks via email and social networks. Playing games and engaging in other leisure pursuits may build important computer skills that are transferable to the workplace. This has important implications, both for public policy, when judging the utility and value of this activity, and for the operators of public access facilities, with regard to restrictions that may be placed on these activities. Moreover, the value of social networks is increasingly evident. From job referrals to political uprisings, the latent value of social ties comes into play when needed, enriching the lives of people and their connections to their society.

5. Does venue type matter?

The driving motivations for individuals' use of public access venues are having access to the internet and to computer equipment. All venues make an effort to cater to their users' needs: cybercafé staff, according to the in-depth qualitative examination, went to similar lengths as library and telecenter staff to meet people's technical and information needs. But other factors can also be important to certain users and populations. By a factor of six to one, libraries and telecenters were more likely to offer in-house training than cybercafés. For introducing and familiarizing new users with ICTs, this may carry great significance for many countries, both those at lower levels of connectivity and those that have sizeable non-user populations (e.g., elderly, rural residents). The Bangladesh data further illuminate the critical role that publicly and donor supported venues can play. Nearly half of the respondents avail themselves of staff assistance every time or most of the times they visit a public access venue. In rural areas, public access would be outside the reach of most without the presence of telecenters. In terms of gender, too, the data suggest that libraries and telecenters do a better job of welcoming females. Looking at specific domains, the study also points to differences. Relative to cybercafés, larger proportions of library users report positive impacts in such areas as Culture & Language, Governance, and Health. Of course, it remains to decision makers in each country or region to judge whether the value added of libraries and/or telecenters justifies the resources required to support these venues.

6. Measuring public access impacts

In the realm of ICTs in general, and public access in particular, it is notoriously difficult to pin down evidence of social and financial returns in unambiguous ways. A central argument relates to how one can make causal linkages between what happens at a public access venue and any subsequent changes that occur in a user's life. In the debate about *attribution* versus *contribution* as a theory of change, this study gives some support to the contribution viewpoint. It is credible to conclude that public access contributes to the accomplishment of specific goals, though it cannot necessarily be said to cause particular impacts. This is not an indictment of public access; the contributory role is critical and provides a foundation for continuing benefits over time. It is important, however, when considering the impacts of public access, to adopt realistic expectations and to recognize the true value of the services these venues provide. A second point, related to realistic expectations, is that across all categories of use and domains of impact, the evidence shows that country context matters: research results are not uniformly generalizable to other countries. Nevertheless, other evidence is coming together to suggest that countries with similar socioeconomic environments may produce similar results. An additional question remains about the timeframe for trying to identify impacts: How long should public access venues be in existence before impacts are expected to occur and become measurable?

Conclusion

The impacts of public access cannot be measured in a generic fashion. Different modes of venue setup, specific ranges of facilities and services, the heterogeneity of user populations, and the level of the information society in a particular country make it imperative to design impact assessments for the appropriate levels and targets of analysis — to distinguish, for example, between basic technology access goals and improving maternal health care.

For a meaningful economic and social livelihood, people need multiple capabilities: a means of generating income; opportunities for formal and informal learning; the ability to maintain their health and well-being; access to relevant corridors of power; the ability to exercise informed democratic rights and obligations; and the ability to participate in the production of their cultural heritage. Add to this the

resources to build, maintain, and enhance social connections, with potentially far-reaching implications for livelihoods and well-being. Finally, there is the human importance of leisure — the ability to play, laugh, and pursue one's personal interests or desires. These are all components of a good quality of life.

Arguably, what public access venues facilitate is the ability to *pursue* these ends. The broader social, economic, and political context determines the extent to which exercising these abilities translates into specific social or economic indicators, such as increase in income, acquisition of a job, admission into college, reduction of disease prevalence rates, or preservation of culture. Measuring the precise contribution of public access to these indicators, relative to other local and national resources, is a complex task, beyond the scope of the Global Impact Study. The study's survey data are openly accessible, so that others may avail themselves of these data to explore the issues raised here, and more. The results compiled here help to shed light on the public access phenomenon and to inform decision-making processes regarding the potential contribution of public access as a factor in meeting policy objectives.

Recommendations

The full report makes recommendations based on the study's findings for these three key constituencies —government and donor organizations, leaders and practitioners of public access programs, and researchers. The summarized recommendations are:

Governments and donor organizations

Governments, multilateral agencies, foundations, and other public and private organizations are the primary supporters of the public access model. Many of these entities are currently investing significant resources in public access, others have done so in the past, and still others are contemplating entry into this field. The following recommendations seek to inform the deliberations, decisions, and implementation strategies of organizations across this spectrum.

1. **Support the wide availability of public access venues**

    Public access is a valuable resource for countries worldwide. The research finds that public access is filling multiple needs for all populations groups, needs that are not being met by mobile phones or other information and communication resources. Governments and donor organizations should continue to make public access availability a strategic consideration, particularly in rural areas and where widespread private access is not feasible in the near future.

2. **Use existing infrastructure, such as libraries, for public access**

    When considering investments in public access, decision makers should scan the landscape in the area to see what infrastructure already exists. In most countries, this infrastructure is found in libraries and cybercafés. This research uncovered that, in all of the surveyed countries but Chile, libraries are largely untapped sites for public access. Equipping libraries for public access provision makes sense, particularly since the data shows venue differences in user profiles, activities, and impacts that favor libraries.

3. **Channel domain-specific information and services**

Despite numerous efforts in recent years that have focused on developing and distributing domain-specific ICT applications in health, agriculture, education, and other areas, large gaps still exist in awareness and skills needed to use these applications, services, and online resources. The evidence shows that public access venues are important for users with needs in these areas, and that these users may be unaware of these resources, even if available at public access venues. Decision makers and creators of these domain-specific resources can leverage the reach and use of public access venues to deliver and increase uptake of these resources and information.

4. **Embrace communications and non-instrumental uses, such as games**

It is clear that venue users devote a significant amount of time to communications, social networking, and other supposedly "non-productive" uses of technology. Rather than considering these uses as detrimental, use in these areas should be supported by public access. This research shows that these uses in fact build skills and support instrumental aims. Increasingly, people get their news from social networking sites, use a variety of online applications to share, collaborate, learn, and create, and build technology skills through leisure activities.

5. **Assess performance against realistic measures**

The performance of venues should be assessed based on a well-grounded appreciation of what public access can and cannot do. It is important to acknowledge the critical contribution public access venues make at the most basic level: providing computer and internet access and fostering the development of digital skills. This research suggests that it is necessary to re-think how to assess venue uses, especially for categories of use that are episodic (e.g., looking for a job) rather than routine (e.g., email). The data show that different people have different needs, and their needs vary at different times in their lives. The value of public access in priority areas is that the venues are available when individual needs arise. The use of episodic services cannot be usefully compared to uses that are routine. Additionally, the performance of venues should be assessed based on a well-grounded appreciation of what public access can and cannot do.

Public access practitioners

Public access practitioners — librarians, infomediaries, and venue staff — operate on the front lines of the public access phenomenon. Their capabilities and modes of service delivery, along with the affordances they enable, can directly influence how users and the general public respond to public access, and thus the level of impacts.

1. **Adopt a flexible approach to rules**
   While some limits on users' behavior are necessary to ensure respect for people and property at public access venues, some restrictions (e.g., on social networking or gaming) can inhibit some of the behaviors that are most likely to lead to development outcomes. Public access practitioners should be sensitive to context — the needs of users, societal trends, new knowledge regarding useful activities — while making adjustments to policies as appropriate to fit the situation. Public access venues should respond and be flexible to emerging needs.

2. **Embrace mobile phones**
   Mobile telephony presents opportunities for venues to leverage or enhance their services. The study results reveal that mobile phones currently do not pose a threat to the relevance of public

access facilities. To the contrary, there are non-disruptive forms of mobile phone use that, if allowed, could heighten the quality of a user's experience in a public access venue — such as printing directly from phones, accessing wireless networks on phones, or reserving a computer via SMS.

3. **Do not rule out fees**

    This study shows that users are willing to pay for ICT resources available at public access venues. Venues facing sustainability pressures may want to consider a fee structure as an option for supporting their activities. However, a decision to institute fees should take into account the socioeconomic status of any priority groups of users or potential users, who may be unable to pay for access, as well as the range of alternative ICT access options.

4. **Attend to venue design and environment for infomediation**

    There are a number of features of public access venues that attract users and encourage productive behavior, such as knowledge workers (librarians, other trained staff) and venue configuration. The broader function of "infomediation" creates the appropriate environment for users to operate based on their unique capabilities and needs, a critical factor in the user experience. Facilitating interaction between users who are drawn to public access venues for the physical space to be with friends or colleagues requires attention to how the space is configured, including the placement of computers (in open spaces or private booths).

5. **Make users aware of content availability in priority domains**

    The study shows that users may not engage in a particular activity at a public access venue because they "did not think of it." This suggests that they are not aware of the relevant resources, or they perhaps assume that the venue has no resources in that area. Practitioners should ensure that they publicize the types of resources they have available, so that, as the occasion arises, users would have public access in mind as an option for addressing specific needs.

Researchers

A primary aim of this project is to re-invigorate debate about the value of public access and to spur new research. These recommendations include specific topics for possible exploration, as well as other opportunities and reflections on new research directions.

1. **Build on methodological lessons.**
    Much work remains to be done to develop and strengthen methodologies for conceptualizing, identifying, and measuring public access impacts. In pursuing this, the project team offers the following considerations:

    ▪   Country context matters enormously, in particular regarding overall connectivity, presence of different models of public access, extent of public access use (current and historical), and public policies. This variability of context needs to be taken into account when attempting to produce generalizable findings, with challenging implications for methodological and analytical decisions.

- Public access exists within an ecology of information and communication resources and practices. This ecology needs to be accounted for at the research design phase as well as when analyzing and interpreting data. Rather than primarily seeking to measure "impacts," a more productive approach to evaluating the social or economic value of public access could be to explore how public access venues fit into this information ecology.
- In developing impact indicators, care should be taken to ensure that venues are not being assessed in terms of unrealistic objectives. The study has attempted to clarify an important distinction between digital inclusion impacts and other types of impact, including social and economic impacts that may be only indirectly associated with the use of a public access venue.
- Collecting financial information from diverse public access venues is a difficult challenge. Rather than large-sample survey methodologies, a more viable strategy would be an in-depth method, involving smaller samples of venues, to cooperate with respondents in producing accurate cost data.

2. **Conduct deeper analysis on questions raised by the full report.**

The project team was inevitably limited in the range of questions analyzed in this study, leaving a plethora of other questions for future research. Researchers can make use of the project's inventory and survey data to enable analyses such as:

- Uncovering the conditions under which impact occurs, linking user outcomes to such variables as a venue's technical infrastructure, rules, knowledge workers, and location
- Further exploring specific user populations, such as youth, women, unemployed, etc.
- Conducting geographic information systems (GIS) analysis, using the project's inventory of 65,000+ geo-located venues
- Further analyzing past impacts and indirect impacts of public access

3. **Explore open inventory and survey data**

The Global Impact Study has made *all datasets and other resources* publicly available. Datasets, instruments, codebooks, methodological notes, and other resources can be found on the project website: www.globalimpactstudy.org.

Chapter highlights

This section summarizes the research design and provides snapshots of the main research findings as presented in Chapters 2–8 of the full report.

Chapter 2: Conceptual Framework & Research Design

The research presented in the full report was conducted in multiple national contexts, deploying various complementary methodologies. The core focus was on five countries (Bangladesh, Brazil, Chile, Ghana, and the Philippines), with complementary studies in three additional countries (Botswana, Lithuania, and

South Africa). These countries span three continents and represent a range of economic development levels, information technology penetration levels, and public access histories and practices.

First, in each of the five core countries researchers conducted an *inventory* of public access venues to establish the contours of the public access phenomenon.[3] Second, after drawing a representative sample of venues from the inventory in each country, researchers conducted *three kinds of surveys*: a survey of 1,250 venues operators; a survey of 5,000 users in these venues; and a survey of 2,000 non-users in the areas surrounding public access venues. These extensive surveys illuminate the patterns of public access use and some resulting outcomes. Third, *seven in-depth case studies* were conducted to examine several salient or contested aspects of public access venues:

- *Infomediation* available through public access venue staff (in Bangladesh, Chile, and Lithuania)
- *Shared use* among public access venue users (in Ghana)
- *Gaming and non-instrumental uses* (in Brazil)
- *Interpersonal communication* (in the Philippines)
- *Mobile internet* (in South Africa)
- *Cost-benefit analysis* (in Chile)
- *Livelihood sustainability* (in Botswana)

STRENGTHS OF THE RESEARCH DESIGN
- Achieves both breadth and depth of analysis through use of multiple methods: multi-country surveys and country-specific case studies
- Targets the outcomes of public access use (as opposed to ICT use in general)
- Adapted to individual country context
- Accounts for indirect uses and impacts, an often overlooked component of public access assessments

WEAKNESSES OF THE RESEARCH DESIGN
- Complexity
- Survey methodology not applied uniformly across all countries, presenting some analytical challenges
- No common theoretical frame across the different methods
- Depends primarily on self-reported impacts

Chapter 3: Public Access: Landscape & Realities

The landscape of public access venues is diverse, with both common and unique features across the eight countries in terms of the types and operations of the different venue models.

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[3] An inventory was also conducted in Lithuania.

- Countries with higher connectivity (e.g., Brazil and Chile) have a higher density of venues compared to countries with lower connectivity (e.g., Bangladesh and Ghana).
- In every country, cybercafés are the dominant form of public access, far eclipsing the numbers of public libraries and telecenters. In general, cybercafés offer similar services across the eight countries.
- Libraries and telecenters are more prominent in certain countries than in others, and may provide a wider range of general and specialized services (e.g., training and job placement services).
- The distribution of venues is skewed in favor of urban centers, particularly for cybercafés.
- Libraries and telecenters overwhelmingly belong to larger organizations and networks, whereas cybercafés are almost always independent entities.
- Cybercafés are on average bigger and offer a wider range of layout configurations.

The composition of public access users is diverse, with youth, adults, males, females, workers, and others represented in varying degrees, depending on the country and/or type of venue.

- The largest user population across all countries is youth in the 16–25 age group.
- Public access users are more educated than the general population, across all countries.
- Users generally come from families with lower to middle incomes, though this study largely represents people from poor families (especially in Bangladesh, Ghana, and the Philippines).
- For large proportions of the population, public access constitutes the only option for computer and internet use, with variation across countries.
- Female users are still a minority. High connectivity countries such as Chile appear to have higher proportions of female users but they were hard to find in other countries during the data collection process. According to venue operators in the five survey countries, female users range from 10%–48% of unique visitors. Library operators reported the highest proportion of female visitors (47%), compared to 28% for cybercafés and 23% for telecenters.
- The vast majority of users are systematic users, for whom public access is a defining feature of their daily or weekly routines, across all countries.
- Nearly 100% of users have a mobile phone, with wide variation in mobile internet use.

Chapter 4: Digital Inclusion: Opening Doors

First-order impacts are observed in the area of digital inclusion — expanding access to technology and information resources, and supporting the development of ICT skills.

- For more than half of all users, public access provided their first ever contact with computers and the internet. The proportion was even higher among lower socioeconomic groups and female populations.
- Public access venues were the only source of access to the internet for one-third of users, and over half would experience a decrease in their use of computers if public access venues were no longer available.
- Public access venues were the most important place for the development of computer skills (40%) and internet skills (50%), far outscoring schools and the home. The figures were higher for people with lower personal incomes and lower educational levels.

- Users see public access venues as places where a broad range of information needs can be met. About half of all users sought specific information on the day of the survey, especially in libraries. The top three areas were education, entertainment, and employment and business opportunities.
- Over 90% of users found the information they were looking for.
- Overall, more than half (53%) of all users indicated that staff knowledge and helpfulness is an important criterion for selecting a public access venue. However, the rate of seeking staff assistance varied. In Bangladesh, a country with a high proportion of novice users, 43% sought staff assistance every time or most times they visited a venue. The next highest country was Ghana at about 14%; the others were all under 10%.

Chapter 5: Beyond Access: Social & Economic Impacts

Social and economic impacts are the second order effects of using public access in the domains of Communications & Leisure, Culture & Language, Education, Employment & Income, Governance, and Health. Significant impacts are reported across 13 categories of use in these domains and for all users, especially population groups that are of priority interest in international development.

- Usage in specific domains was highest for Education (66%) and Employment & Income (42%), followed by Health, Culture & Language, and Governance (20%–25%).
- Over 50% of users reported positive impacts in *communication with family & friends, meeting people, education, pursuing leisure activities, pursuing interests & hobbies, time savings, and access to employability services*.
- Between 25% and 40% of users experienced positive impacts on *financial savings, access to government information & services, language & cultural activities, income,* and *sending or receiving remittances*.
- Relatively low proportions of users reported negative impacts, and these tended to be associated with expenditures of time or money: *financial savings* (20% of users), *time savings* (12%), and *income* (10%).

Further analysis provides more insights. With regard to activity:

- Among those who used a public access venue in the last 12 months for a particular domain, over 50% reported positive impacts (from 60% in Employment & Income, to over 90% in Education).
- Across all domains, approximately 90% of users were able to accomplish information- or service-related tasks. This was captured through a self-assessment focused on a three-part sequence of actions: searching for information, finding information, and taking action.
- Examples of goal achievement (final step of the sequence) included: applying for a job, earning more money for business, applying for school admission, better managing an illness, making changes to dietary habits, completing an online government service, and participating in a local cultural event.

Use and impact by venue type varies:

- Across all domains, library and cybercafé users showed a higher frequency of use than telecenters users.

- Use in the domains of Culture & Language, Governance, and Health was higher in libraries than in the other two venue types.
- Larger proportions of library users reported positive impacts in several categories in the specific domains targeted by development initiatives, including: *education*, *time savings*, *access to government information & services*, *local language & cultural activities*, and *health*.

Although the data on users shows a profile of younger, relatively well-resourced males, the findings on impacts for other user populations offer important evidence and insights that moderate the picture presented by the overall user profile.

- Unemployed users experienced positive benefits in similar proportions to employed users, and in one category (*communication with family & friends*) the unemployed were more likely to report positive impacts.
- Similar proportions of people below and above the poverty line experienced positive impacts across the 13 impact categories examined.
- Larger proportions of unemployed users (both below and above the poverty line) reported positive impacts in *education* (80%, compared to 71% for employed users). Higher proportions of employed-below-poverty-line users reported positive impacts, compared to employed-above-poverty-line users (43% versus 32%).
- Perceptions of positive impact rise as education level increases.
- Overall, females benefited similarly to males, although more male users perceived positive impacts in the Employment & Income categories, while more female users perceived positive impacts in the Communications & Leisure categories.
- Higher proportions of older users tended to experience positive impacts in the primary development domains (such as Education and Employment & Income) compared to younger users, who were more likely to report positive impacts in the Communications & Leisure categories.
- Working-age users report positive impacts in the employment-related activities, and older adults were more likely to report positive impacts in the *health* and *government* categories.
- Rural users, based on an analysis in Bangladesh, trailed their urban counterparts in terms of usage across most domains. However, when controlling for such factors as computer experience, frequency of use, and venue type, the differences in impact largely disappeared.

The role of Communications & Leisure is given special attention. It is examined as a domain, as a means to achieving impacts in other domains, and as a contested issue, reflecting the widespread view that communication and *leisure activities* constitute frivolous uses of public access facilities.

- Fully 94% of users reported that engaging in Communications & Leisure activities at public access venues had improved their overall ICT skills.
- Results from computer-based exercises in Brazil showed that people who largely used computers for gaming and social networking were as capable with computers as those who used them primarily for instrumental purposes, indicating an alternative pathway to gaining digital literacy.
- There was a strong correlation between frequency of engaging in Communications & Leisure activities and positive impact across several categories: *education*, *time savings*, *access to*

employability resources, *local language & cultural activities*, *health*, and *income*. Two categories that did not follow this trend were *financial savings* and *sending or receiving remittances*. Public access venues played an important role in enabling communications among dispersed family members, as in the study of overseas Filipino workers, although private home access was preferred.

- Email and social networking sites were *the most* important online resource (over websites) for 12%–37% of users across the 13 impact categories.
- Results of the study of South African teens showed that mobile internet was not a substitute for public access. Public access and private mobile offered different affordances, with public access venues supporting the development of digital literacies and mobiles supporting everyday social literacies.

Chapter 6: Hidden Impacts: Non-users

Assessments of public access impacts often neglect to examine non-users. This study found strong evidence that public access has impacts reaching beyond those who have directly used public access venues at any point in time. Although indirect impacts were almost always evident in lower proportions than direct impacts, they constitute an important element of impacts.

Reasons for non-use were related to user characteristics rather than venue features.

- The most common reasons for non-use were that respondents did not know how to use computers, had computer access elsewhere, or did not have time to visit public access venues.
- Mobile phones were not a factor contributing to people's non-use of public access computers. Despite high levels of mobile phone ownership (94%), only 4% of non-users said they did not use public access because they could access the internet on a mobile phone.

Public access was an important past resource for former users.

- Of former users, 28% had first used a computer at a public access venue, and 35% first used the internet at a public access venue.
- Computer non-users in particular considered public access venues to have been the most important locations for development of their computer and internet skills (about 40% each).

There were fairly high levels of proxy use (people using public access on another person's behalf).

- Depending on the domain of activity (Education, Governance, Health, etc.), between 10% and 23% of public access venue *users* reported using a venue on another person's behalf.
- Ten percent of *non-users* said they have asked someone else to use a venue on their behalf. These non-users were also more likely to report positive indirect impacts from public access, compared to those who had not ever asked someone to use a venue on their behalf.

Chapter 7: Looking Closer: Salient & Contested Issues

Five in-depth studies examined issues which often stand out in the academic and general discourse on public access, and which tend to generate controversy about the usefulness and impact of public access.

- **Sharing: Understanding and rethinking shared access.** Analyzing collaborative, co-present sharing in two Ghanaian cybercafés, this study found that public access enables different forms of sharing and collaboration among patrons, ranging from the most simplistic (asking a café employee a quick question) to more formalized (working together around a single computer) to fleeting and voyeuristic (glancing at a stranger's computer screen). Patrons highlighted the learning benefits of working together, rather than the cost savings, as a motivation to use public access venues.

- **Infomediaries: Brokers of public access.** Staff who serve as intermediaries between users and ICT resources are an important feature of public access venues. This study compared infomediary practices and user perceptions in Bangladesh, Chile, and Lithuania, and found that the ability of infomediaries to empathize with public access venue users is as important as their technical skills. Non-profit and for-profit venues did not differ significantly in how they encouraged staff empathy: in both cases, empathetic infomediation is simply good business.

- **Non-instrumental: The value of non-instrumental computer use — skills acquisition, self-confidence, and community-based technology teaching.** "Non-instrumental" activities, such as gaming and social networking, contribute to users' acquisition of computer skills that are associated with greater employability. Non-instrumental activities figure prominently in users' introduction to computers, and while respondents' computer skills grew with their overall computer use, the activity mix made little difference: "gaming" leads to similar computer skills as "working."

- **Interpersonal: The impact of cybercafés on the connectedness of children left behind by overseas Filipino workers.** Interpersonal communication activities in public access venues matter to family connectedness within Filipino families where parents are working overseas. Internet access increased family connectedness. Frequent and convenient access made a greater difference: private access in the home or via a child's mobile phone appears vastly superior in this regard to access in a public access venue.

- **Mobile: Public access, private mobile – the interplay of shared access and the mobile internet for teenagers in Cape Town.** Mobile phones and public access computers are not substitutes for one another. Each corresponded to distinct activities and information behaviors, leading to different social, academic, or professional practices. Public access users have developed elaborate, fine-grained practices combining public access computers and mobile phones, taking best advantage of the complementary aspects of each.

Four common themes emerge across these in-depth studies:

- Public access is not simply a transient substitute for private access, nor one that is always inferior to private access, but public access and private access are often complements. Which is preferred for a given activity depends on multiple factors, ranging from timing and circumstances to the user's particular purpose. Such preferences vary over time even for a single individual.

- Public access venue users have developed complex, fine-grained practices to best take advantage of the opportunities each access option offers. They pursue one or several access options in combination, either individually or in concert with other users.

- Public access plays a critical role for vulnerable populations. These are the places where many among the youngest, poorest, and most marginalized populations first encounter information technology, and they serve as the primary avenue through which they develop ICT skills and get assistance in their journey toward digital literacy.

- Public access opens multiple alternative pathways to digital literacy. "Learning" is a key reason to use public access venues, not necessarily through formal classes but to learn by doing, by watching others, and by playing, and to learn through communication with others or the mentorship of thoughtful infomediaries. Public access venues represent a crucial laboratory for the development of non-traditional paths to digital literacy.

Chapter 8: Benefits & Costs: How People Value Public Access Venues

The cost-benefit methodologies sought to capture the value public access users and non-users ascribe to public access venues by examining (1) how much users paid to reach a public access venue, and (2) how much non-users were willing to pay to keep public access venues open for other people's benefit. From the user perspective, the travel cost method provides an expression of the value users place on public access in the amounts they are willing to, and in fact do, pay just to reach a public access venue.

- In purchasing power parity terms, users incurred annual expenditures ranging from $15 in Ghana to $83 in Brazil to travel to a public access venue.

Where people had choices, public libraries were highly valued.

- In Chile and the Philippines, users were willing to forgo more to reach a library than a cybercafé. Both users and non-users in Chile voted their highest support for libraries, indicating willingness to pay about $49 to keep libraries open, compared to $16 for telecenters and $7 for cybercafés (in purchasing power parity terms).
- Where users did not have a variety of options, they were prepared to pay to get to whatever type of venue was available.

Non-users were willing to pay for other people to have public access to ICTs.

- Non-users indicated a willingness to pay from $2 (Bangladesh) to $101 (Philippines) to keep public access venues open. This is an important indicator of the social value of public access.
- There was overwhelming support for libraries in Chile, with a mean individual valuation of libraries around $57, compared to $20 for telecenters and $8 for cybercafés.

The full report, *Connecting people for development: Why public access ICTs matter*, can be found on the Technology & Social Change Group website at: http://tascha.uw.edu/publications/connecting-people-for-development.