Using the Capabilities Approach to Analyze Access to Information and Communication Technologies (ICTs) by the Poor

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> *"… for many evaluative purposes, the appropriate "space" is neither that of utilities (as claimed by welfarists), nor that of primary goods (as demanded by Rawls), but that of substantive freedoms --- the capabilities--- to choose a life one has reason to value. If the object is to concentrate on the individual's real opportunity to pursue her objectives (as Rawls explicitly recommends), then account would have to be taken not only of the primary goods the persons respectively hold, but also of the personal characteristics that govern the conversion of primary goods into the person's ability to promote her ends" (Sen 1999:74).*

Access to information and communication technologies (ICTs) has generally been viewed as critical in society today largely because of the potential opportunities that it provides. Not only do ICTs keep people connected, it is increasingly becoming crucial in a world economy that is now described as being knowledge-based and information driven. In our globalized world, ICTs are needed for people and communities to remain competitive. As such, universal access (UA) to ICT policies, can be seen as policies that expand people's freedoms. Access to ICTs allow for more opportunities, and provides people knowledge and information that can be used to expand their choices in the lives they value. However, many of the policies that take into account universal access (UA) to ICTs look at ways of providing access to them without considering the points that Sen raises about the differences among people in the ways they value and transform the same bundle of goods, and the goals they have for using them (Sen, 1999).

Operationalizing Sen's Capability Approach (CA) is a daunting task, especially if it is broadly applied by considering all the goods and services that people value. It is not the aim of this study to operationalize the broad application of Sen's approach, but instead limit it to a particular commodity. It is in this regard that this paper uses Sen's capabilities approach with respect only to the access and use of ICTs. In particular, it investigates whether people have access to ICTs, the characteristics of people who make use of it, how and for what ends they are utilized.

This paper will first discuss the capabilities approach (CA), and issues pertaining to its operationalization. Particular focus is given to key concepts in the approach, particularly functioning, capabilities and freedoms. The section will then look at how functioning, capabilities and freedoms apply to ICTs and how the concepts will be operationalized in the research will also be presented. Last it will present findings on how different demographical characteristics affect the access and use of ICTs based on household surveys conducted in Puerto Princesa, Palawan and Carmona, Cavite.

I.   Sen's Capability Approach (CA)

In the capability approach (CA), "the analysis of development… treats the freedoms of individuals as the basic building blocks. Attention is thus paid particularly to the expansion of "capabilities" of persons to lead the kinds of lives they value ---- and have reason to value… Having greater freedom to do the things one has reason to value is (1) significant in itself for the people's overall freedom, and (2) important in fostering the person's opportunity to have valuable outcomes… Greater freedom enhances the ability of people to help themselves and to influence the world, and these matters are central to the process of development." (Sen 1999:18)

Comim describes CA as "a framework for evaluating and assessing social arrangements, standards of living, inequality, poverty, justice, quality of life or well-being" (Comim, 2001:4). It is seen as an improvement on how people have traditionally viewed development, and has been central to the human development report series launched by the UNDP (Gasper, 2002).

Over the years, there have been much discussion on the issues this approach raises and ways for applying its principles in a more practical sense. The first step to its practical use is in its operationalization. One difficulty with its operationalization, however, is CA's "theoretical underspecification and inclusive view of operationalization which contests not only the evaluative but also the practical foundations of utilitarianism" (Comim, 2001:2). Another problem cited is how its key concepts, namely functionings, capabilities and freedoms are 'obscurely' or interchangeably used (Gasper, 2002). Nonetheless, this has not stopped scholars (Gasper (2002), Comim(2001), Biondo (2002), Wanderley(2001)) from attempting to

put a more practical handle on the approach. Below are some of the highlights discussed by some scholars about the concepts:

Functioning

Sen says the concept of functioning "reflects the various things a person may value doing or being" (Sen, 1999:75). They are "various components or aspects of how a person lives" (Gasper 2002:4). Hence, evaluating functionings requires the identification and weighting of valuable things that people are able to be or to do. Individual functionings can be represented by real numbers and a person's actual achievement can be expressed by a functioning vector. This can be operationalized by using a priori definition of a set of basic capabilities (Comim, 2001).

Capabilities

A person's capability is the set of alternative functionings vectors a person could attain, or in other words the extent of one's positive freedoms (Gasper, 2002:5). Capabilities could mean actual things that a person has done, as well as things they can possibly do.

Furthermore, CA also points out that people differ in how they transform the same bundle of goods into opportunities for achieving their goals. Differences can be due to people's physical abilities, and in the social status conferred by different communities on people (Biondo, 2002). Sen (1999) identifies at least five distinct sources of differences among people: personal heterogenities, environmental diversities, variations in social climate, differences in relational perspectives, and distribution within the family.

Freedom

According to Sen, freedom "involves both the processes that allow freedom of actions and decisions, and the actual opportunities that people have, given their personal and social circumstances. Unfreedom can arise either through the inadequate processes or through inadequate opportunities that some people have for achieving what they minimally would like to achieve" (Sen 1999:17). Some see, in his discussion of freedom, his extreme emphasis on choice (Gasper, 2002). A person's freedom is seen to have intrinsic value and is part his being. Not only achieved functioning is valuable, but also the capability of choosing and discriminating among possible livings (Comim,

2001). This means that even if someone is provided the opportunity and has the needed capabilities, they still have the freedom to decide whether the opportunity is worthwhile to them

How then can CA be used in a specific field, in particular, to ICTs? How can capabilities, functioning and freedoms be applied and observed in empirical terms in the field of ICTs? What are some of the important differences among people that could affect their capabilities, functioning and freedoms with respect to access and use of ICTs?

II.   Applying the Capability Approach to the access use of ICTs

There are similarities in how people traditionally measured development and how people conventionally measure progress in information societies. While development was usually measured in terms of gross national products (GNP) and gross domestic products (GDP), access to information and communication technologies is often measured in terms of the growth in the infrastructure through teledensities, number of Internet service providers (ISPs), number of computers per capita, etc.

However, just as with the human development index (HDI), it is increasingly becoming apparent that policies must coordinate the construction of both human and technological capabilities in order to benefit from the potential applications of new ICTs. In measuring indicators for sustainable information societies, the United Nations Commission for Science and Technology for Development (UNCSTD) for instance, aside from infrastructure, includes, experience, skills and knowledge as critical components in the development of information societies (Mansell, et. al , 1998). These components are obviously capabilities that are needed to function effectively in today's information society. Hence, it is not such a leap to argue that CA can be applied to ICTs.

Furthermore, in applying the approach, Comim (2001:10) argues that analyzing development in terms of on-income variables, as CA does, will not yield much difference at a macro-level. The difference will be more evident in micro-economic studies, wherein people are allowed to discriminate with regard to what they consider as the good life. Thus, for a research using CA to analyze the use of ICTs, it is important to look at differences on the individual or household level. Hence, for this

research, it is crucial that household surveys be used to discriminate between the things people value as important with respect to ICT use.
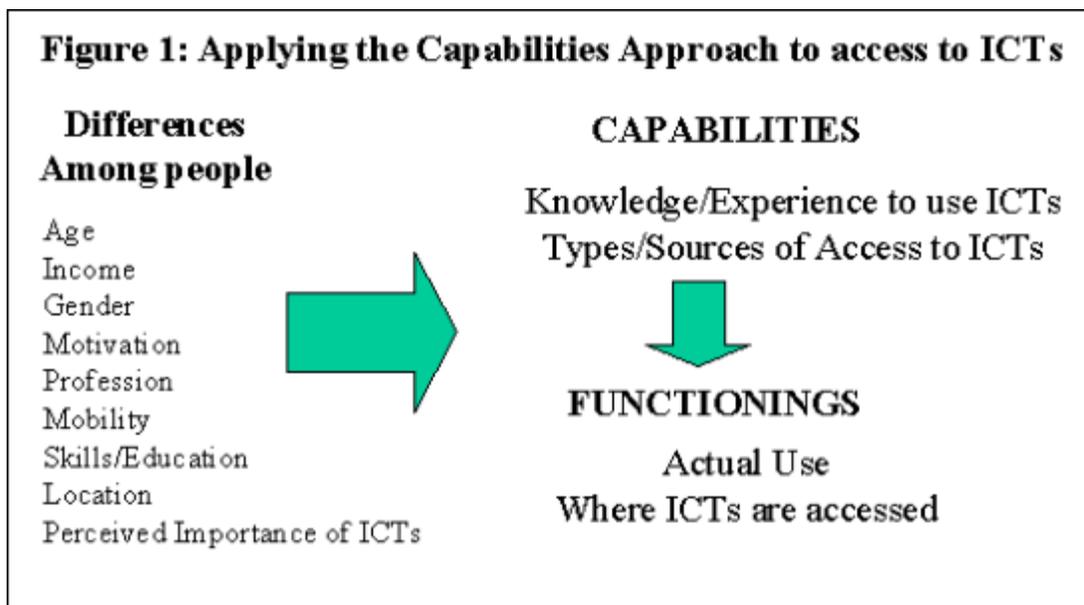
Functioning, Capabilities, Freedom and ICTs

Sen says that "the evaluative focus of this 'capabilities approach', can be either on the realized functionings (what a person is actually able to do) or on the capability set of alternatives that she has (her real opportunities). The two give different types of information --- the former about the things a person does and the latter about the things a person is substantively free to do" (1999:75). Both versions can be used separately or in combination.

If this approach is now applied to access and use of information and communication technologies (ICTs), how can realized functionings or capability set of alternatives be operationalized?

Realized (and unrealized) functionings

According to Sen (1999:131) "the assessment of capabilities has to proceed primarily on the basis of observing a person's actual functionings, to be supplemented by other information. There is a jump here (from functioning to capabilities), but it need not be a big jump, if only because the valuation of actual functionings is one way of assessing how a person values the options he has."   Actual or realized functioning, therefore pertains to actual use of ICTs (Refer to Figure 1).

Figure 1: Applying the Capabilities Approach to access to ICTs

Differences Among people

Age
Income
Gender
Motivation
Profession
Mobility
Skills/Education
Location
Perceived Importance of ICTs

CAPABILITIES

Knowledge/Experience to use ICTs
Types/Sources of Access to ICTs

FUNCTIONINGS

Actual Use
Where ICTs are accessed

Furthermore, because this research is also specifically concerned with universal access to ICTs, realized functioning with respect to the use of ICTs should consider

recent use of ICTs. This means that a time frame with respect to the use of the technologies must be considered. For purposes of this research, respondents will be asked their use of ICTs over the past year. While it is important to know how people transform a bundle of goods (in this case ICTs) by knowing how and for what purpose they use them, this will not be extensively covered by this investigation on universal access.

Capability Set of Opportunities

The difficulty with operationalizing CA, is the simple fact that some capabilities are harder to measure than others, and this in part explains the limitations with respect to gathering the needed data that can be used to apply the approach. With ICTs, for instance, Mansell, et. al. (1998) used users' consumption of ICT service and technologies as indicators of the demand potential (capability) for new technology and services. They also used educational attainment in math and engineering as indicators for capability to design new applications and artifacts.

Given that a person's capability is the set of alternative functionings vectors a person could attain or what a person has done, as well as things they can possibly do, then this can be operationalized by asking people whether they know how to use various kinds of ICTs (Refer to Figure 1), such as telephones, cellular phones, computers (specifically email and Internet). At the more basic level, they could also be asked whether they can write and send letters by mail.

Real opportunities for using ICTs are also dependent on the technologies or ways access is provided in the communities they belong to. As such, sources of accessing ICTs (whether public or private, in school or at offices, through PCOs or telecentres, landline or cellular etc.) will have to be answered. Likewise, individuals will have to be asked which "model" or opportunity they use.

Finally, in evaluating the impact or improvement with respect to universal access to ICTs, both realized functioning and actual opportunities should be investigated. Knowledge to use an ICT does not always mean they are using the technology. Geographical access to the technology, also does not translate to use. In this sense, actual opportunities may or may not translate to realized functionings.   It is realized functionings, which actually translates to demand for ICT services, and this may influence the provision by private corporations of these services to unserved and underserved communities.

Differences among people and importance of choice

An important issue raised by CA is that while access to a basic good, in this case ICTs, is a prerequisite to use, individual differences, capabilities and choice also play a role on whether people make use of these goods, how they apply them, and how they are valued.

The common measures for access to ICTs are teledensities (as far as telephones are concerned) or the number of Internet users (as far internet penetration is concerned) . Traditional measurement of access does not usually look into the variations in the use of (whether in amounts or for purpose) these resources by different people. However, Sen argues that "social and economic factors such as basic education, elementary health care, and secure employment are important, not only on their own, but also for the role that they can play in giving people the opportunity to approach the world with courage and freedom" (Sen, 1999:63). This means that people have different ways of transforming the same bundle of goods into opportunities of achieving their plans in life. These differences may be physically or socially manifested. Biondo in citing Rawls (Biondo, 2002) says that the variation may be due to differences in: (1) moral and intellectual capacities and skills; (2) physical capacities and skills; (3) conceptions of the good; (4) tastes and preferences.

In the ICT literature, gender (Colle and Roman, 2002), context (Heeks, 2002), age (Dertouzos, 1997, Delgadillo, et. al. 2002), social class, race and religion (Gomez and Casadiego, 2002) are some of the frequent factors cited as possibly affecting the ability to take advantage of ICTs. Other also stress the importance of education and skills (Lopez and Villaseca, 1996), which may be indicated through school enrollment and technical training, as being linked to the ability to take advantage of opportunities in the new digital economy (Campbell, 2001). This is echoed by O'Farell, who adds that aside from education, age, gender and mobility of the community and their proximity to commercial centers, class and ethnic groupings are some factors that should also be considered (O'Farell, 2001). Likewise, the kind of profession and tasks a person does will also dictate their use or need for these technologies, as well as its effects on their professional and private lives (Rubery and Grimshaw, 2001; Winter and Taylor, 2001; Miller and Cardy, 2000). Local language and content is also important to make ICTs more relevant to the poor (Madhusudan, 2002, Rajora, 2002, Gomez and Casadiego, 2002). Hence, ICT-based systems need to be more indigenized and contextualized to the community it is being situated in (Heeks, 2002).

Given that perceived value, motivations and interest are also factors in choice as well as functioning, a study by Blanchard and Horan (2000) also points to the significant relationship between computer experience and email experience on the interest of community members to participate in virtual services such as community bulletin board, communicating with friends and telecommuting. The level of real life civic engagement was also a factor with respect to whether individuals were also interested in participating in government or politics in a "virtual" setting. These three factors: computer experience or exposure, familiarity with the email and membership in community organizations may also be factors in people's use and need for ICTs.

How then will the differences in people with respect to ICT use be operationalized for this research? This study will look at the differences primarily in terms of gender, age, education, socio-economic income, the location of their home (urban/rural), as well as mobility (or migration patterns, indicated by having more than one home to go to) (Refer to Figure 1). Differences in preferences and perceived value of ICTs will also be noted. This is because individual choices to use a basic commodity, can be affected by a person's perceived value of the good in terms of how it can be used or affect their lives, whether at home or at work and whether positively or negatively.

Finally, people may actually know how to use a commodity (ICT), recognize its importance and value it, and want to use them but are unable to use them. For our purposes, this could be defined as "unrealized functionings". This is important in this study because people with unrealized functionings are the primary concern of policies on universal access to ICTs. Unrealized functioning is premised on the fact lack of access to a bundle of good inhibits the person from that life choice, which also captures Sen's concept of "unfreedom". This could be measured by asking people whether they consider certain ICTs to be important at work or at home, why they consider them important and it could be compared against their actual knowledge and use of the ICT. The reasons that prevent people from using or accessing ICTs, are the issues government policies on universal access should also address.

The Case of Puerto Princesa City

This investigation looks at ownership of ICTs, access to them and mitigating factor for its use. It investigates location, gender, educational attainment, income and age as variables which influence the use of certain ICTs, such as telephones, cell phones, text messaging, personal computers (PCs) and email. It is based on survey

information randomly collected from individuals Puerto Princesa City, Palawan (n= 269).

Puerto Princesa is one of the larger cities in the country with respect to land area. Despite being a city, many of its barangays are still rural. The barangays are very diverse, with some located in the coast, some in farm lands, and others in mountainous areas. In selecting these areas, the research intends to capture various conditions that strategies for universal access should be able to overcome. In so doing, the paper will map out issues that have to be factored into the application of ICTs for rural poverty reduction.

Ownership of and access to ICTs
Puerto Princesa

Table 1: ICT ownership, Puerto Princesa (n=269)

ICT	# who own	%
Radio	215	80
TV	167	62
Cable TV	35	13
PC	14	5
Landline Telephone	19	7
Cellular Phone	63	23

Table 1 shows that radio and TV remain the most accessible means for communications in Puerto Princesa, and access to cellular phones comes next. Ownership of radio is higher than TV may be explained by the absence of electricity in some rural barangays. More people say they own a cell phone, compared to those who actually have a landline at home, and this is reflective of the national situation where there are now more cellphones than landline phones.

Landline

In Puerto Princesa, while 170 respondents, or 63% said having a phone in the house was important, only 51 people (of 268 respondents) said they had a phone in the house, and of these, only 19 (or 7%) said they still have a landline in the house. Of those who've had a phone previously or currently, 45 said they had Piltel, 2 said PLDT, and 1 said Bayantel (which may mean they had this when they lived outside of Puerto). Since Piltel and PLDT are actually part of one company, the delivery of landline services in Puerto Princesa remains a virtual monopoly.

Table 2: Accessing Telephones in Puerto Princesa (n=269)

	N	%

From friend/neighbor	59	22
Public phone	87	32
Office/school	19	7
Own house	22	8
Has to go to town center	84	31

The question of access to ICTs in the above table pertain to use in the past year. That there are only 22 people who said they have used their own phone in the house, even though there are 35 people surveyed who said they currently have a phone in the house may suggest that the phone is not fully utilized. This may partly explain why subscription to telephones are low in some places in the country.

Some people said a phone was important primarily for convenience, especially in situations where there are no public phones nearby. Most said a phone in the house was important, especially in case of emergencies. It can be used to keep in touch with family especially in cases where the members no longer live in the same house. Others said it was useful for their business.

On the other hand, those who no longer said they had a phone in the house said the reason they had their line disconnected was because they could no longer manage the costs, or they were unhappy with the service of the provider. Those who didn't have a phone altogether said they didn't have any business to use it in anyway, or that they didn't have anyone to call. Some said they simply couldn't afford it, while others said they had a phone in their shop or office. So, it was either there was no use, or they couldn't afford it or they had alternatives.

Those who say the phone is not important to have in the house argue that it is not a necessity since you could always personally visit the person you want to talk to. Some cite the problem of monitoring it's use, and others say it's only their "children's friends" who call, and hence may be just an added distraction. Some also rank the phone lower in the priorities, compared electricity and water, especially when they consider the fact that they might use it sparingly (if indeed the primary reason is for emergencies).

Cell phone

It should also be noted that even though only 23% said they owned their own cell phone, access to a cellular phone may at home may be larger since some actually share or borrow the cell phone of another member of the household. Assuming, for instance that the percentage who access from their relatives (23%) are cell phones accessible in the same household, then access to cell phones at home are already 46% in Puerto Princesa. This figure should however be contextualized since getting a strong signal in Puerto Princesa is highly problematic, especially when you start to go to more rural barangays.

Table 3: Accessing Cellular phones in Puerto Princesa (n=269)

	N	%
own	63	23
relative	61	23
friend	14	5
officemate	3	1
Office issued cell phone	1	negligible

*frequencies for others mentions were reclassified into relatives (3), 1 (officemate)

In Puerto, 23.4% of the sample owned their own cell phone, and another 29% borrow the cell phone of somebody else.

The primary reason for not having a cell phone is cost. Either they couldn't afford one, or they could not maintain the regular use. A few argued that they have a cell phone they could borrow or they already have a landline. Only one person said that there was no signal in there area, although in general, many of the rural barangays surveyed really did not have cellular signals, or if at best, weak signals.

Among those who use a cell phone in Puerto, a majority said they used SMART (80), followed by Globe (20), and then Talk and Text (11). The primary reason is signal quality, the fact that SMART was in Palawan first, and also cost.

Of the payment options, 100 said they used prepaid, and only 3 said they had fixed payments. The reason a lot of people prefer prepaid cards is that they feel they have more control with their expenses, and the mode for paying is easier, and there's no problem with monthly bills. (This illustrates the rapid growth in the market as a result of prepaid options, and in fact this is how SMART was able to grow much faster than Globe). One problem with prepaid cards however, is that people are less aware of whether they are being charged correctly for their calls.

They consider the cell phone important, for the same reasons as the regular landline telephone. For emergencies, for convenience. Some of the peculiar reasons they mentions aside from these is the privacy your won cell phone provides. One can keep their secrets, it's easier to keep in touch with friends and loved ones both within the country and abroad, and simple reason that you can be reached virtually anywhere at any time.

The fact that more people have been able to use a telephone at onetime or another, versus use a cell phone may mean that public access to telephones are better or it may simply imply that phones have been around longer and hence people may have been more exposed to it.

Location and ICT Use

Table 4: Location and Percentage ICT Use

	Mail	Phone	Cell phone	SMS	PC	has email
Puerto Princesa (n=269)	57.2%	68.8%	51.7%	41.6%	24.5%	8.2%

The data (see Table 4) shows that as far as ability to use ICTs are concerned, more people use phones and cell phones compared to personal computers and email.

It is also apparent that while more recent technologies have yet to take a hold on the population, sending letters via post has already been superseded by voice communications. In Puerto Princesa, where access to the ICT infrastructure is not yet well developed, access and use is lower for the more modern technologies. The use of mail, however is lower than use for phones because some communities still don't have reliable postal services.

Rural/Urban disparities

Table 5: Location and ICT Use in Puerto Princesa

	Urban (n= 120)		Rural (n=149)	
ICT know-how	Yes	%	Yes	%
Sends Post/Mail	71	59.2	83	55.7
Telephone	106	88.3	79	53.0
Cell phone	87	72.5	52	34.9
Knows SMS*	74	61.7	38	25.5
Computers*	48	40.0	18	12.1
Has email address	20	16.7	2	1.3

The disparity between urban and rural areas (refer to Table 5) are quite pronounced in Puerto Princesa's case, which simply highlights the great disparity in the development of infrastructure in the area. In the rural areas, while post may be less reliable, and in some cases non-existent, more people have sent letters/mail rather than call. This simply shows the inconvenience of accessing a nearby phone for people living in rural areas in Puerto.

Using the Chi-square to test whether the relationship btween ICT use and location of the barangay is significant reveals that using a phone, cellphone, and a personal computer is significant based on an alpha level of .05. People in urban areas have a distinct advantage with respect to capabiltiy to use these technologies, as compared to their rural counterparts.

Gender and ICT Use

Table 6 shows that women in Puerto Princesa are actually more capable in using ICTs. The data reveals that women are more likely to be using telephones, cell phones, computers, the Internet and email. Furthermore, by testing whether the relationship between gender and ICT use is significant, chi-square test reveal that the differences were significant ($p<0.05$) with respect to use of cellphones, computers and knowledge about the email. The differences were not significant ($p>0.05$) with respect to telephone use. The number who used the internet usage and had email accounts were too small to be significant.

That women have more access to ICTs bodes well for development, because women, being the primary caregivers, are more likely to transmit these benefits to the rest of the family and community. This may also have implications as far as using or tapping women as conduits of information and knowledge, or as intermediaries for spreading know-hows found in the Internet. Models for using women and ICTs in development could be seen with how Grameen in Bangladesh has branched in to Grameen Phone to provide access.

Table 6: Gender and ICT Use in Puerto Princesa

	Male (n= 113)		Female (n=156)	
ICT know-how	Yes	%	Yes	%
Telephone	72	63.72%	113	72.44%
Cell phone	49	43.36%	90	57.69%
Computers	21	18.58%	45	28.85%
Knows about email	10	8.85%	28	17.95%
Has email	6	5.31%	16	10.26%
Uses Internet	10	8.85%	16	10.26%

The area of gender and communication is a field that is also worth further investigation. Differences in how women and men use the technologies and the kinds of work they are employed in could reflect societal stereotypes. Historically, with the telephone, this was evident with the 'feminization' of telephone operators (Martin, 1991).

Education and ICT use

Table 7 indicates that education is also a factor in the use of ICTs. Almost all who have finished college (98%) have been able to use a phone, whereas only 55% who have only finished primary schooling have used a phone. The same disparity can be seen with the use of the cell phone and the computer. Sixty-five percent of those who have finished college know how to use a computer versus only 8% for those who finished elementary schooling.

Table 7: Educational attainment and N (Percentage) ICT use in Carmona

	Has Used a Phone	Has used a cell phone	Can send SMS	Has Used a PC	Has email account
Elementary (n= 51)	28 (55%)	17 (33%)	7 (14%)	4 (8%)	0 (0%)
High School (n=111)	94 (85%)	84 (76%)	70 (63%)	24 (22%)	1 (.01%)
College (n= 66)	65 (98%)	63 (95%)	58 (88%)	43 (65%)	14 (21%)
Vocational (n=11)	11 (100%)	10 (91%)	9 (82%)	5 (45%)	1 (9%)
Others/No Answer (n=5)	1 (20%)	3 (60%)	2 (40%)	1 (20%)	0 (0%)

The data above shows that a digital divide exists within communities and not between areas alone. Educational attainment is apparently one of them. For one, those who could afford to get a more decent education are the rich. On the other hand, the poor are more likely to drop out of school early. This implies that efforts to bridge the information gap through the access and use of ICTs should begin as early as possible, such as in the primary level or else, a significant number of people may never gain the knowledge to capitalize on the use these technologies. This is especially important because the school system is a logical access point, especially with respect to the Internet.

Income and ICT Use

Table 8 indicates that close to 70% of those with incomes less than P5000 per month have used a phone and 62% have use a cell phone. This proves that even poor households have a need for these technologies. In the past, the reason provided by telephone providers for not installing lines in some areas was the argument that there was no market. If market is simply a function of profitability, this may be true. However, there are people who need and use these services; hence there is a rationale for these services to be provided even among the poor communities.

Table 8: Income and usage of ICTs (per cent), Puerto Princesa

Monthly House Hold Income	Sends Mail	Has Used a Phone	Has used a cell phone	Can send SMS	Has Used a PC	Has email account
Less than 5000 (n=117)	60 (51%)	65 (55%)	41 (35%)	29 (25%)	13 (11%)	2 (1.7%)
5001-10000 (n= 66)	38 (58%)	54 (82%)	37 (56%)	30 (45%)	17 (26%)	4 (6%)

10001-20T (n=26)	18 (69%)	24 (92%)	23 (88%)	17 (65%)	12 (46%)	6 (23%)
More than 20T (n=14)	11 (55%)	11 (55%)	14 (70%)	12 (60%)	9 (45%)	5 (25%)
Does not know (n=2)	1 (50%)	1 (50%)	2 (100%)	1 (50%)	0 (0%)	0 (0%)
No Answer (n=39)	24 (62%)	29 (74%)	20 (51%)	20 (51%)	15 (38%)	5 (13%)

Table 8 shows that the use of various ICTs is greatly influenced by income. Telephone use, cellphone use, PC use and the coresponding skills like knowldeg of email, ownership of email, use of Internet were all significant (p<0.05) with respect to household income. The data reveals that individuals in households with higher are more likely to have used or capable in using ICTs. This indirectly implies that the affordability of these services are still crucial to their use. While competition has brought down prices to some extent, some people still consider the cost of using telephones, cell phones and computers as prohibitive.

It is hoped, that with the onset of newer technologies, like cell phones, which makes the cost of providing universal access less expensive, the needs of ordinary people may eventually be met without companies having to sacrifice the bottom line. This may partially explain the fact that once prepaid cards were first introduced in the cell phone market by SMART, its subscription rose dramatically to the point that it became the leading service provider in the market. The use of SMS through cell phones, is another reason why it is considered more useful for the poor because SMS is a lot cheaper and can be still be transmitted even in areas with weak signals.

Age and ICTs
The older group in the sample (aged 45and above) were less likely to use telephones, cell phones and computers (refer to Tables 9). Some see new technologies as only for the young, and that they are already too old.

Table 9: Age and Use of ICTs , in Puerto Princesa

	youth (12-21) n=54	young adult (22-34) n=102	adult (35-44) n=48	Old (45 and above) n=64
Sends mail	27 (50%)	61 (50%)	30 (63%)	36 (56%)
Telephone	42 (78%)	75 (74%)	31 (65%)	37 (58%)
Cell phone	40 (74%)	57 (56%)	21 (44%)	20 (31%)
Knows SMS*	40 (74%)	48 (47%)	16 (33%)	8 (13%)

Computers*	23	33	8	2
	(43%)	(32%)	(17%)	(3%)
Knows email	17	14	6	1
Used Internet	14	11	1	0
Has email	11	10	1	0
address	(20%)	(10%)	(2%)	(0%)

Testing whether the differences are significant ($p<0.05$), reveals that there is significant difference with respect to Telephone use, cellphone use, knowledge os SMS, computer use, Knowledge about email, possesion of an email address, and use of the Internet. In all these cases , the younger groups tend to know more and are more capable in using ICTs.

What is striking about the data is that in Puerto Princesa there's only one person older than 34 with an email address. Clearly, much more can be done considering that those between 35 and 44 years of age is far from being "untrainable."

For the elderly and less educated, what may be key is indirect access to the technology, and to the information and knowledge that comes with it. Indirect access occurs when there are other people in the household who use the ICT and who in serve as intermediaries for who do not know how to use the technology . For example, some people ask their children to email or text for them, and in return, some people send messages through these same people who then relay them back to the "non-users." In other cases, other users within the household may actually help bring the elderly to embrace and learn to use the ICTs on their own.

Computers

Table 10: Ownership of computer vs. Knowledge to use PC, in overall

	Can operate a PC?	
Has own PC	Yes	No
Yes	30	10
No	112	352

Ownership does not guarantee that a person in the household knows how to operate an equipment, and this is evident in the data above. However, ownership makes a person more likely to know how to use a computer than if they do not have a computer in the house.

More people who know how to use a computer, however, don't possess a computer of their own. This may suggest that access to computers may be thru schools, the office, or public internet cafes or computer rental shops.

Furthermore, only a slight majority of those who know of email and the Internet have actually possess an email account or have tried using the Internet. However, it is only logical that before one starts using a computer application, they must first become aware of it and what it can do.

Perceptions on the potential impact of ICTs on their lives

Respondents in the two areas were also asked whether they considered the telephone and cell phone important to have at home or at work. They were also asked why it was or was not important to learn to use the computer. Understanding their reasons has implications on how ICTs are used and what prevents them from utilizing it.

A. Perceived Importance of ICTs

  A. *1 - Telephone at home.*

A majority of the respondents (60+ percent, check actual value), say they do consider having a telphone as important. There was no significant difference even if we look at age, gender, educational attainment, household income or whether they are mobile (that they have more than one home (because of work or studies)).

<u>**Emergencies**</u>. Most people in Puerto recognize the need for a telephone especially in emergencies. This is especially important for people who do not live close to any public phones. Some even have to travel to the town center (which is already a considerable travel distance, and time) just to place a call. Furthermore, in such cases, they would not need to leave the house. Some also cite cases when a member of the family has to come home late, it helps reduce anxieties to know where they are.

<u>**Staying in touch**</u>. needed for communicating with relatives that live outside the province like Manila, or Negros, or also within Puerto considering how large the city is.
important to have quick access to important news. Especially important in cases where the members of the family work or go to different places.
it is also important in case some reminders have to be given to the family.

<u>**Convenience**</u>. Its advantage is also that it is more convenient, since they could call at any time, it saves them time and takes less effort for important communications or emergencies. No need to leave home if there are some important things that need to be communicated. Going out of the house would be a bigger bother. Less time is wasted.

<u>**Business/Work/School**</u>. Some also see it as a business tool, and this is in contrast to those who reason that they don't need the phone because they don't have any business

to run. Some say it is important in order to know about what's going on in school and if there are any assignments.

Linking work and home. It is also interesting to note, that the perceived use of the phone is also very much connected to staying in touch with the office and vice-versa.

Reduced cost – local calls are cheaper (compared to calling in PCOs or using the cell phones), and costs less if one included the cost of travel or transportation. Calls using the landline phones is cheaper than using a cell phone.

Social Function - for leisure, just to be able to talk to someone else. Some mention that they also have the opportunity to have a phone pal.

Other Reasons - Telephone access is also important because it is a prerequisite for some for access to the Internet.

Telephone at Work

People recognize the importance of the phone at work in terms with dealing with their co-workers, employers, and subordinates. It is also useful for coordinating with suppliers and dealers. It's also an important service for clients and customers to contact or places orders from them.

Connected with the importance of having a phone at home, having a phone at work makes it easier to stay in touch with what's happening at home, especially in case of emergencies.

For efficiency, and easier transactions – a phone also makes transactions more efficient and also serves to save time and costs, especially transportation costs.

The cell phone

It is interesting that there are demographc differences when one asks whether a person needs a cellphone, versus people needing a landline phone at home. It is significantly different ($p<0.05$) with age, educational attainment, and with respect to people having more than one place to go home to.

Most of the usefulness associated with the telephone is also mentioned with respect to the cell phone. It is useful for emergencies, and keeping in touch with friends and family. But there are also unique features and uses of the cell phone that was brought up.

More control. Among these was it's being more personal, and this has implications on control. Control may be in terms of keeping secrets, as well as controlling the cost of

communications. Having your own cell phone also means you don't have to ask permission from others on how to use it. It is your own personal space.

Added convenience. You could also call anywhere at anytime (provided there is a signal), and therefore more useful in emergencies.

Security. Mobile but still in contact. One person mentioned the importance of the cell phone in terms of how her husband will be reassigned somewhere else, and with it, they could still be in contact.

Keeping up with the times. Some say they need the cell phone just to keep up with the times and to be "in" or as some say to be "hi-tech". This simple remark actually captures the idea of a "wired" world. Some recognize the need to be part of this, lest they be left behind, and lest they be out of touch with the benefits it has. Even if it's as simple as missing out on an outing planned out by your peer group.

The Computer

There are people who want to learn because they have specific applications in mind. In particular, there are those who want to learn to send email.

There are those who simply want to be more prepared for the future. In their mind, they want to be prepared in case their work calls for it in the future. There are those who want to learn in order to teach it to their children. Some also say they do not want to be left behind with the knowledge, or that they remain ignorant about it. Some see it as an important skill to have and that such a skill is "in-demand." This goes to show some people recognize how the nature of work is changing, and they see knowledge about computers as being crucial to their competitiveness in seeking future employment.

Others see the computer as being important to make work more efficient and faster.

And some are interested purely out of curiosity.

Perceived lack of significance of ICTs:

The phone at home
> **Absence of Connections/Networks**. Those who consider it unnecessary to have a phone mention the reason that they don't have anyone to call anyway, or that they don't have any businesses to run. Some also say they don't have any relatives who live far away. With others, they reason that because they don't receive calls not call other regularly, it seems like it's not cost effective to have one.

Complicates their lives. Some also say that having a phone will only complicate their lives, and there's the added problem of cost, and that it is others in the household who have more interest in it than they. Some complain that many people, especially neighbors, want to use the phone, and hence controlling expenses becomes a problem. Some argue that it could be a distraction to their children's studies. Some also find the task of paying the bills for the service a hassle, and that often the billing is inaccurate.

Alternative access also plays an important role. Some also argue that they prefer using the cell phone, and find it unnecessary to have a phone line as well. Some use the office or phone in their shop instead.

Cost/Expensive – aside from some simply not having money to have it installed. Some still consider it a luxury as some simply reason out that they are just "an average family." It is also apparent that some simply don't prioritize ICTs among their expenses, and this is one expense that they'd give up when their trying to control their budget.

Others. Some also simply say they don't need it, or that it does not fit the lifestyle in the area. Also, there are those who see it only as a tool for business purposes.

The phone at work

Those who said the phone wasn't important at the workplace gave the following general reasons: (1) They have alternative communication technologies which they find more useful, such as a mobile; (2) The nature of their work does not entail staying in an office, hence they can't use a phone anyway; or the nature of their work really doesn't require them to have a phone—they do not have anyone to call; (3) Their house is located near their workplace, and hence if they are needed at home they can easily be contacted; and (4) they couldn't maintain the expenses entailed with having one at work.

The Cell phone

1. **Imperfect technology**. Many still complain about the technical problems of the cell phone, especially for residents in Puerto Princesa. Foremost is the absence of reliable cell signals or altogether no signals in their place of residence.

2. **Lack of skills**. Another is that they don't know how to use one, they have poor eyesight. Some say they are already too old, and this suggests partly a fear of using the technology.

3. Some complain about 3rd parties, or unnecessary intrusions into their privacy

4. **No one to call**. they also mention that they really have no one to call., no use for it.

5. **Cost**. It's too expensive to call, and have no money to buy one, or to maintain monthly expenses, and that it's not a priority

6. **Availability of Other sources or Indirect access** - They already have a phone, or they could borrow the cell phone of their brother or their friends. Some also say that they are either always in the house or office anyway so there's no need to have a cell phone.

The Computer

The common themes about why people find it unnecessary to learn the computer:

Age. They are too old and that it's for the children anyway. Associated with this are the "physical "limitations" of not having good eyesight, or that they can not go out of the house anymore to learn. Those who consider themselves old have many reasons for not using the computer, one of which is where would they apply it if they are old already, and that its already "too late" for them to learn. They also say that because they are old, they would be hard to teach.

Motivation. They're just not interested, nor have the patience and motivation, and that it's not important for them.

Time. Their too busy with work and have no time to learn.

Implications

First, the impact of ICTs is dependent foremost on access to it. While there access to ICTs are increasing, people must always bear in mind which ICTs are most accessible and used by people in rural communities. It is apparent that radio and TV are more accessible means, although cellular technology is quickly gaining prominence.

Second, if access is available, who currently uses it? The data clearly shows that the young, the highly educated, people in urban areas and rich at present are the more likely beneficiaries of access to ICTs.

Women, on the other hand, are just as likely, if not more likely than men to make use of communication technologies. What are the implications therefore for rural poverty alleviation? First, the fact that more people in urban areas compared to rural areas use ICTs, is largely because of the infrastructure availability. Second, that richer household are more likely to use ICTs also have a lot to do with costs. The issue

therefore would be how to deliver provide the infrastructure to rural areas and also how to make the cost affordable and manageable. The popularity of prepaid cards for cell phones and the use of SMS show that ordinary households value control over their budgets, as well as control over the use of their ICTs. Third, the since fewer percentages of the population get to finish high school or higher education, it will be important that at the elementary or primary level, use of ICTs like the telephone, cell phone and if possible the computer is already taught, much like how we are often taught early on how to read the time. Fourth, the fact that many between 35 and 44 remain ignorant about email goes to show that more effort has to be made to retrain people who missed out on the "computer revolution" during their years in school.

Third, if people have access and use it, for what purpose do they use it. IN large part, a lot of people remain ignorant with the use of ICTs because they do not see how it applies in their situation. Some still simply see it as a tool for business, without realizing other economic impacts it has like savings in time and transportation costs. People still have a difficult time identifying the crucial information that runs through their daily lives. It is sad to hear how other people wonder who would they call? Perhaps if people could see how other people use the technologies then a better appreciation of what it could do will be developed. With a better appreciation, hopefully will come new ideas of how it could be used in their own contexts. Perhaps, just as good health practices are taught in the community level, good ICT practices around the world may also be taught to ordinary people. Only then would ICTs become relevant to more people.

Last, ordinary people set priorities based on their own set of values and understanding of what is important in their day to day lives. It is important for us to also understand these values if we are to influence their use of ICTs in the future. (what kinds of information do they consider crucial? (Refer to open-ended data)

Conclusion

Access to ICTs has often been simply considered in terms of geographic access and affordability. However, some argue that access to ICTs, and basic needs in general, are not solely limited to this, but should also factor in the capabilities of people to make use of these resources (Sen, 1999). Considering the advancements in technologies, the reduction in prices of services , and the increasing ubiquity of ICTs, one issue is whether more people are actually using them.

Even with liberalization of the telecommunications industry, universal access is one area that will remain an important regulatory function of government. In fact, recent evaluations of policies connected with the liberalization of the industry suggest that competition has only occurred within markets deemed profitable, and has resulted in oversupply in selected areas (NTC, 2000). This is not limited to landline phones, but also in the cellular market, where competing companies try to eat into each other's market , or steal each other's clients by offering upgraded or free cell phones, rather than actually expanding into other areas by providing more cell sites.

The survey conducted in Puerto Princesa reveals that whether one controls for the location, gender, age, income, or educational attainment, the percentage who have used ICTs are highest with respect to use of telephones, and lowest with respect to using email. Telephone use being the highest among the ICTs may be because it has been in existence for over a century. The ability to use an ICT may also have more to do with the ubiquity of the technology. Using cell phones and sending SMS is more common, for instance, than using PCs and email, although the latter has been around longer.

In summary, even as newer technologies provide more possibilities for reaching and communicating with people, government should remain vigilant, because new technologies are no assurance that groups long disadvantaged would finally gain access to information and new knowledge. It is even likely that those who gain access to newer technologies are the same groups who already have access to older technologies. In the end, access to new ICTs could simply mirror the divide that exists with respect to access to older ICTs. The fact that telephones have remained inaccessible to some people up to now is worth noting. Even though newer technologies are able to overcome some of the technical limitations of the telephone, access to its use apparently goes beyond the technical. For everyone in society to have equal opportunities to reap the benefits that ICTs could bring, strategies must then go beyond access in terms of proximity to the ICT infrastructure, but also look into the socio-economic and cultural barriers to its use, as well as building the capabilities of people to use them. Furthermore, people must be made more aware of the applications and opportunities that these new ICTs bring. In this way, a more integrated approach [1] has to be developed, in order to make sure policies and strategies for universal access to ICTs are not wasted, and actually leads to human development.

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[1] An integrated approach in terms of integrating efforts between the government, private sector and civil society, as well as an intergrated approach as far as providing access, marketing, applications and content development, training and capability building, and an integrated approach as far as linking the various forms of ICTs.