Taking e-Gov to the bottom of the pyramid now: Dial-a-gov?

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Abstract

Much attention has been paid to the use of ICTs to improve the delivery of government services to citizens in developing countries. Government and donor funds have adopted two strategies in parallel: (i) the re-engineering and automating of government services, and (ii) the installation of telecenters (community Internet access centers) for citizens to access reengineered government "e-Gov" services.

The model of delivering e-Gov via the Internet has major drawbacks as shown by survey data representing 341 million people at the Bottom of the Pyramid (BOP) in India, Pakistan and Sri Lanka. First, only 40% have even heard of the Internet and only 0.8% have used it (LIRNE*asia*, 2006). Second, it will take a lot more time and significant funds to roll-out enough telecenters to cover the BOP sufficiently. Third, most telecenters fail, while the successful ones are sustained by revenues from non-Internet services such as voice calls, fax and photocopying. But even these revenue streams may dwindle – according to our survey, over 41% of current BOP non-owners plan to purchase a phone within 2 years. They will spend their already-limited communications budgets on phones they own, not at a telecenter.

Further the approach of e-enabling government processes through ambitiously re-engineering and installing ICT systems have inherent problems – 85% of these simply fail (Heeks, 2003).

By viewing the telephone as the end-device for e-service delivery, implementers can automate those *parts* of a government process that can deliver value quickly, through "smaller" (less complicated, therefore less likely to fail) applications. By not seeking to re-engineer entire government departments immediately, these projects face less resistance to change from public-sector employees. Given that over 90% of those at the BOP use phones already (LIRNEasia, 2006), significant use is more likely if the necessary attention is paid to language, design and publicity.

The Internet, accessed at a telecenter, and sophisticated e-government systems will play a role in providing "higher-end" citizen services, for example submitting a passport application online with an uploaded digital photograph. But at a time when the Internet is barely reaching 2.7 million people at the BOP in these countries, the paper argues that phones are the cheaper, more immediate and ubiquitous tool for Asian governments to inform, transact and interact with almost 341million of their most needy citizens.

The paper presents the drawbacks of the existing e-Gov models and presents an alternative telephone-centric model for electronic delivery of public services citizens. It draws on research conducted by LIRNE*asia* and previously published as well as unpublished e-Gov case studies.

1. Introduction

Electronic-Government (e-Gov) applications have the potential to facilitate good governance by increasing transparency, efficiency, and citizen-centric service delivery and to act as effective media to facilitate citizen consultation, policy discussion and other democratic inputs into the policymaking process (Torres, Pina and Acerete, 2006). According to Grimsley & Meehan (2007), e-government systems differ from commercial information systems and go beyond efficiency, effectiveness and economy in that they include political and social objectives such as trust in government, social inclusion, community regeneration, community well-being and sustainability.

Depending on focus and targeted constituents e-Gov initiatives can have provide 3 types of services: G2G (government to government), G2B (government to business) and G2C (government to citizen). G2C systems aim to take the benefits of e-Gov to citizens – to make their access easier and more efficient and to increase transparency so that all citizens have equal or easy access to the services. The delivery of G2C e-Gov services is the focus of this paper.

Taking the dividends of any government reform activity to all citizens is difficult. The benefits of reforms in infrastructure often first benefit the urban or middle-higher income groups of the populations disproportionately. For example, telecom infrastructure is often first implemented in urban areas (due to population density providing for economies scale and higher buying power, real or perceived), and generally consumed first by higher-income groups. The challenge for G2C e-government projects is to give the poorest citizens access to government services electronically in a manner that does not discriminate geographically or economically. Taking the dividends of e-Gov to the Bottom of the Pyramid (BOP), thereby decreasing existing disparities in access, is in fact the holy grail of e-government projects. Using the standard Socio-Economic Classifications (ESOMAR, 1997) of A – E, this paper focuses on delivery of G2C e-Gov services to citizens in the D and E socio-economic classifications, or those at the bottom of the pyramid (BOP), to use a popular term.

This paper examines the strategies adopted by developing Asia to take e-Government to the BOP. It will present the drawbacks with the existing model that hinders the BOP reaping the benefits of e-Gov in the near future. It will propose an alternative model that e-Gov strategists and implementers can adopt to narrow the digital divide now, instead of at some indeterminate future time.

2. Taking e-Gov to the BOP : the current thinking

Much effort is being applied to the use of Information and Communication Technologies (ICTs) to improve the delivery of government services to citizens in developing countries, especially to those at the BOP. Government and donor funds are being deployed to implement two strategies in parallel:

(i) the re-engineering and automating of government services so that they are accessible online, and

(ii) the installation of telecenters (community Internet access centers) for citizens to access reengineered government e-Gov services via the Internet.

In essence item (i) is a strategy relating to increasing efficiency of the “back-end” or “back-office” processes (often within one or more government organizations), and item (ii) is a strategy relating to the “front-end” (i.e. the citizen-facing service delivery) of e-Gov services.

We will examine the current practices surrounding the back-ends and front-ends further. .

2.1. The approach to re-engineering the back-end

The supply of e-Gov services in developing Asia involves automating manual (and often archaic) processes at often overstaffed government organizations. Best practice involves first re-engineering existing process and then automating it. This sequence is best practice for a good reason: simply automating existing government processes (without re-engineering) could increase inefficiencies in the system instead of reducing them.

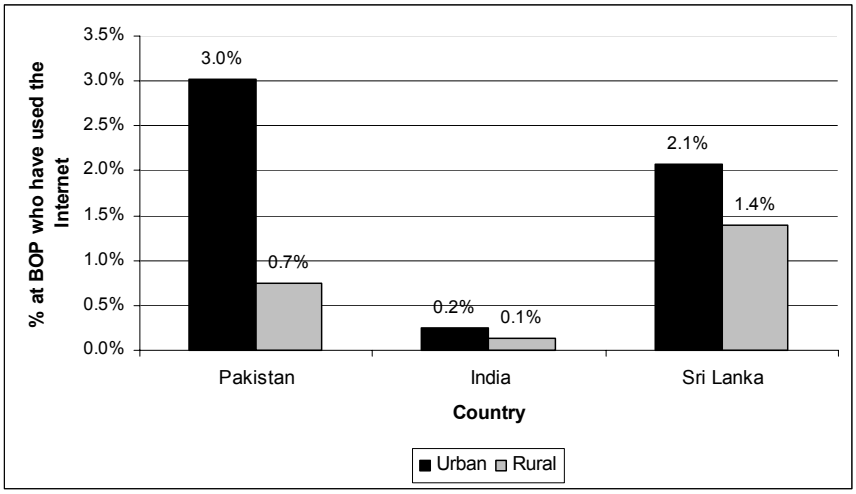
There exist a number of models that describe the evolution of e-Gov services in a country (see among others Santos and Heeks (2003), West (2004) and Moon (2002)). Based on these models we can summarize the sequence that governments globally adopt to introduce e-Gov services.

- Stage 1: Inform – mostly static information about government services are made available via web sites. According to UNPAN (2005) over 94% of member states of the United Nations have at least one government website or some kind of enhanced web presence.
- Stage 2: Interact – government's presence online allow citizens to send and receive information (e.g. ability to email the relevant government office, receive an emailed response). According to UNPAN, 88% of nations offer interactive services such as form downloads and emails to officials.
- Stage 3: Transact – a full government transaction (payment) can be completed online, using mostly credit card payments. Only 24% of nations offer online payment services, according to UNPAN.
- Stage 4: Transform – the government uses its online presence as a tool to improve governance by increasing citizen participation in decision making (e.g. electronic feedback from citizen, pushing of life-enhancing services to citizens etc) and provides horizontally integrated services. Only 15% of member states of the United Nations encourage participatory deliberative decision-making and engages the citizen in open dialogues online (UNPAN, 2005)

In a web-based world of the above model, the ease of implementation goes from easy (Stage 1) to difficult (Stage 4). Stages 1 and 2 are relatively simple to implement and can often be done without re-engineering existing systems. At most addition of an employee or two into the government organization is needed to monitor the emails received and send responses. Stage 3 requires more serious back-end re-engineering, and usually involves the implementation of some financial/payment system within the organization. Apart from new processes and systems for Stage 3, in some developing countries policy or legislative changes may also be required before credit card payments are accepted by government institutions. Stage 4 assumes full integration of back-end government services, and full participation by citizens in the user of services.

2.2. The approach to front-end delivery through telecenters

Figure 1: The urban-rural digital divide within the BOP (LIRNEasia, 2006)



The above model for back-end re-engineering and sequential evolution is based on the assumption that citizens will access these services via the Internet.

But low income levels in developing South Asia often do not allow even citizens of middle-income households to access a computer or the Internet at home or at work. The access problem is compounded when the BOP segments of the population is considered. Not only do citizens

at the BOP lack sufficient income, but they tend to live in rural areas – where commercial provision of Internet services is often patchy. Figure 1 (LIRNE*asia*, 2006) shows not only the low Internet use but highlights the urban-rural divide within the BOP in the three countries studied.

Therefore, to bridge this divide and to enable the BOP citizens to access e-government services, community access points, variously referred to as telecenters, kiosks, knowledge centers, community Internet centers and a host of other names are viewed and used as the primary channel.

Telecenters come in various forms: Colle (2000) points out that telecenters can differ from each other on a number of different dimensions such as profit vs. service orientation, provision of narrowly-focused services (e.g. providing access technology only) vs. multipurpose services (e.g. providing access technology, training, development information), commercial (charging clients for services) vs. free, urban vs. rural and so on. Irrespective of the form, telecenters are designed to provide a combination of ICT services ranging from simple voice calls, to full broadband Internet based services.

Telecenters provide a host of services to the BOP citizens, and access to e-Government services is one of them. But for e-Government services to reach the BOP, telecenters are a primary channel. Often e-Government applications can provide an important opportunity for achieving the sustainability and development goals of telecenters (Amin, 2005) because government services are generator of demand for content. Indeed, in many countries there is a mutual dependence of e-Gov services and telecenters: telecenter content is anchored on e-Gov applications and e-gov applications use telecenters as the primary channel to take services to the BOP. For example:

- In Sri Lanka the telecenter is the dominant channel in delivering e-government services to citizens. With over USD 83 million in funding from various sources such as the World Bank, the Government of Korea and the Government of Sri Lanka, the e-Sri Lanka initiative has allocated about USD 35million towards project that re-engineer government departments (World Bank, 2004). These projects range from the simple (developing web sites for government departments) to the complex (automating the process of issuing driving licenses to citizens). The channel for BOP access to these re-engineered services is the network of 200 rural telecenters, implemented using USD 7.5 million of e-Sri Lanka projects funds (World Bank, 2004). The target has now risen to 1000 telecenters (ICTA, 2007). One of the outcome indicators for measuring the success of the telecenter network is that people use the telecenters regularly to access government services (among other services) (World Bank, 2004).
- In India, the 1020 Drishtee Village Information Kiosks claim to have e-Government services as the most popular applications used by citizens. These include filing online grievances and other government services that citizens of rural areas would have previously had to spend a lot of time and money to access such as obtaining driving licenses and land records (Conroy, 2006).

Numerous other similar strategies where the telecenter is the dominant delivery channel for e-Gov are found across South Asia. Indeed the number of telecenters that have been funded in the recent past and are being planned for the near future in the developing world is impressive. Table 1 provides a snap shot of well-known telecenter programs in India, Sri Lanka and Pakistan.

Table 1: Telecenter programs in Pakistan, Sri Lanka and India

Country	Organization	Number of telecentres to be deployed (as announced or already deployed)
Pakistan	Pakistan State Oil	3,500
	Pakistan Telecom Authority	400
	Post Office Telecenters	12,000
	Agha Khan Rural Support Program	200
	Karakoram Development Authority	100
	Allama Iqbal Open University	2,000
	Telecard, Mobilink, Telenor	200
	Entrepreneurs	Several 100
Sri Lanka	USAID	500
	Sarvodaya	189
	E-Sri Lanka/ICTA	1,000
India	MS Swaminathan Research Foundation	95
	ITC (E-Choupal)	20,000
	Drishtee	1,020
	Tarahaat	196
	Gyandoot	21
	N-Logue	6,000
	Gramdoot	200

Source: Authors, based on information from Salman Ansari Technology Consultants (Pvt) Ltd., PTA, Synergy Strategies Group, Sarvodaya (R. Ariyawickrama, personal communication, 22 June, 2007), ICTA, MSSRF (Murugan, personal communication, 20 August, 2007), ITC, Drishtee, Tarahaat, Gyandoot, APDIP, Chibber (2007).

3. Critique of the current model

The current model of re-engineering and proceeding through the "inform → interact → transact" sequence as well as its dependence on the Internet (at telecenters) has significant problems.

3.1. Drawbacks of back-office re-engineering and automation

The act of re-engineering requires radical changes to the way people within government work. Therefore the challenges re-engineering processes and introducing IT system into a government organization are many: resistance to the system by the employees affected by it, job uncertainty caused by imminent introduction of the system and a host of other factors cause existing actors to resist any intervention. If some of the government employees are benefiting financially from the inefficiencies in the existing (manual) system, their resistance to any new system will be even higher. According to Heeks (2002), the gap between the existing system (manual method) and the proposed (newly re-engineered and automated) system is the primary cause of e-Gov system failure in the developing world.

Economically too, re-engineering and automation model is problematic. The financial logic of embarking on such initiatives is based on Western cost-benefit calculations in which the cost of the new technology is more than balanced by the benefits of labor cost savings (Stanforth, 2006). Whether such economic benefits are delivered by ICTs in Western economies is still a matter of much debate. But we can be fairly certain that in developing countries such calculations are even less applicable since technology costs are typically two to three times greater and labor costs up to ten times lower than in industrialized countries (Heeks and Kenny 2002).

Due to a host of reasons, some identified above, it is estimated that the majority of e-Gov projects fail. Heeks (2003) claims that only 15% of all projects can be classified as a success (35% are total failures and 50% are partial failures).

The failure of e-Gov projects come at a high prices for developing countries. Apart from direct and indirect financial costs (that are indeed high), Heeks highlights the risk of "future cost" and states that:

> The failure of e-Gov today increases the barrier to e-Gov projects in the future in two main ways. First, through loss of morale of stakeholders, particularly e-government champions who may 'defect' to private sector or overseas. Second the loss of credibility and trust in e-Gov as an approach to change (Heeks, 2003).

In this light, developing countries in particular can ill afford to get it wrong when it comes to implementing e-Government.

3.2. Drawbacks of the Internet based evolutionary model of e-Gov services

The evolution of e-Gov service provision from inform → interact → transact describes the sequence in which government present their online offerings. The main drawback of the model with regards to the BOP is the dependence on the Internet. Each stage depends on citizens having access to the Internet. We will see below that Internet access and usage by the BOP is negligible at the moment – therefore we argue that the models dependence on the Internet leaves BOP behind and benefits only the few who are economically well off.

Another drawback is the quality of information available in the first instance (the "inform" stage). Even though many government organizations across the world have a "web presence", the information contained on these web pages is limited and basic (UNPAN, 2005) and therefore will be of marginal value to citizens – for example government department websites will allocate space to discuss the history of the department, legal provisions and contain a message from the relevant minister, but not provide information citizens need on a day-to-day basis to obtain the services provided by that government entity.

Yet another drawback is the dependence on credit cards at the "interact" stage. Payments via the Internet have only been successful for e-government initiatives in the developed world, where most people have bank accounts and credit cards. But the total number of credit card users in India is 45 million (Rebello, 2006). In Sri Lanka less than 830,000 credit cards have been issued (CBSL, 2007), with the number of actual credit-card owners being even less (due to multiple cards per person). In both countries, that is less than 4% of the population, none of them at the BOP. This calls to question the ability of transaction capabilities of government services to reach the BOP.

3.3. Drawbacks of the dependence on accessing the Internet (via telecenters)

Let us examine the implications of depending on the Internet (often accessed via telecenters or some form of common access point) to reach the BOP in South Asia.

Research by LIRNE*asia* (2006) representing 341 million people at the BOP in three developing countries in South Asia (India, Pakistan and Sri Lanka) shows that Internet usage is minimal at the BOP in these countries – ranging from 0.3% of the BOP in India (the lowest) to 1.9% in Pakistan

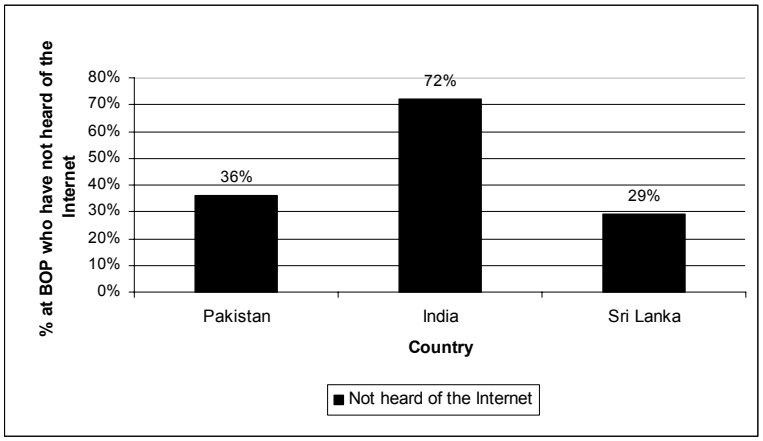
Table 2: Internet Use at the BOP (: LIRNEasia, 2006)

Country	Pakistan	India	Sri Lanka
Percentage at BOP who have accessed the Internet	1.9%	0.3%	1.5%

(the highest) (Table 2).

Such low usage numbers call to question the availability of Internet facilities at the BOP in these countries. Even in countries like India and Sri Lanka which have embarked on large telecenter programs (Table 1), the reach of the Internet is miniscule.

Figure 2: Lack of awareness of the Internet at the BOP (% population who have not heard of the Internet)



Usage (accessibility) is low. But awareness is also low. When asked if they had heard of the Internet, the percentage of the BOP population who said "no" ranged from a low of 29% in Sri Lanka to a high of 72% in India (Figure 2). This equates to 216 million people at the BOP in these countries who have never heard of the Internet.

This does not bode well for the strategy of delivering government services to the BOP through telecenters. Telecenters are costly to implement, and to roll out a sufficient number to reach the BOP population takes time. But even if they were rolled out in sufficient numbers and in the appropriate (rural) locations, the awareness has to be built from the existing low levels if they are to be used by citizens.

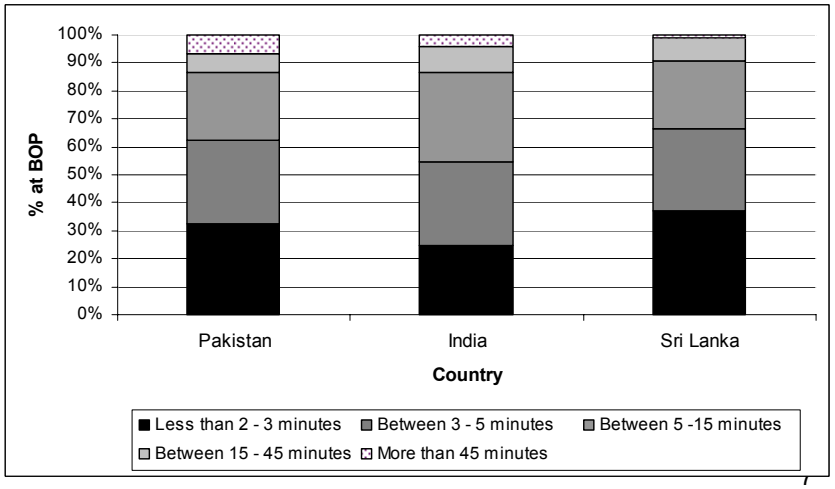
4. Phone usage in the BOP

Table 3: Telephone Usage at the BOP (LIRNEasia, 2006)

Country	Pakistan	India	Sri Lanka
% of those randomly approached who have used a phone in the preceding 3 months	98%	94%	92%

In contrast to use and awareness of the Internet, use of telephones is extremely high among the BOP. In all the countries surveyed in the LIRNE*asia* (2006) study, over 92% of the population had used a phone in the last 3 months (Table 3). The sample consisted mainly of BOP respondents – therefore we can safely say that phone use among the BOP is also high, and certainly orders of magnitude higher than the Internet use.

Figure 3: Time taken to reach the nearest phone (LIRNEasia, 2006)

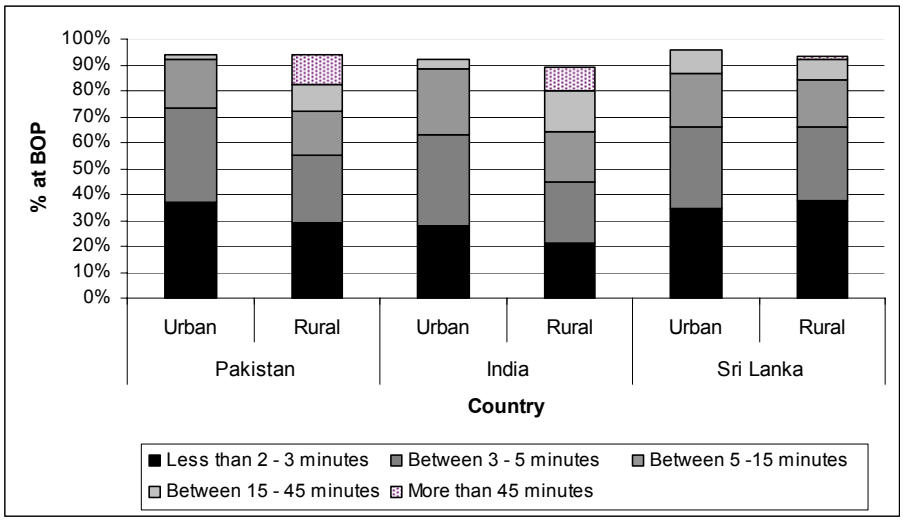


Not only is awareness high (indeed people are not only aware, they have in fact used phones), but phones are relatively easily accessible - around 60% of the BOP in all the countries can get to a phone in less than 5 minutes (Figure 3).

Breaking this down by urban and rural does not change the numbers significantly – even in rural areas, the people can get to

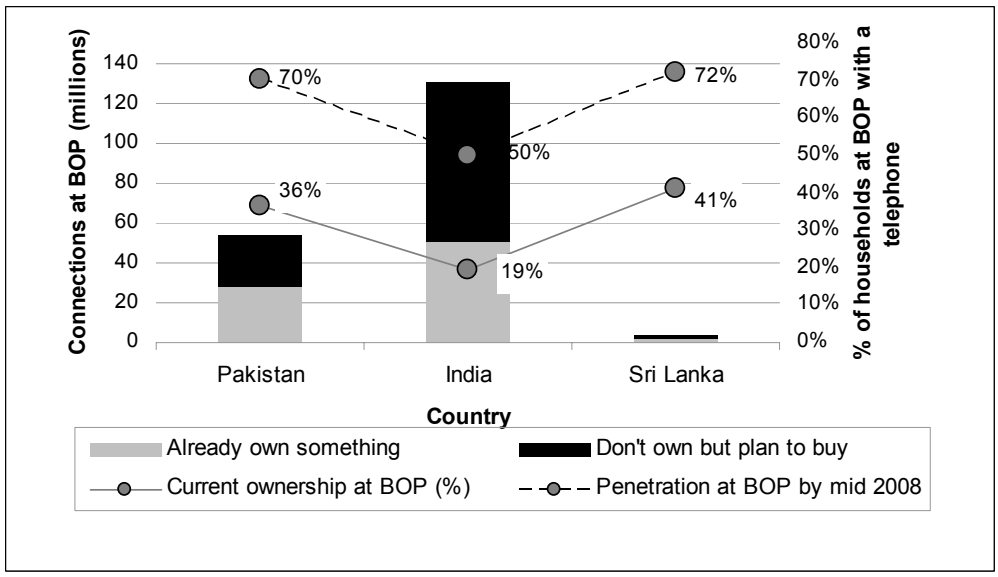
a phone, though not nearly as quickly as they can in urban areas, especially in Pakistan and India (Figure 4).

Figure 4: Urban vs. Urban vs. Rural access to a phone (LIRNEasia, 2006)



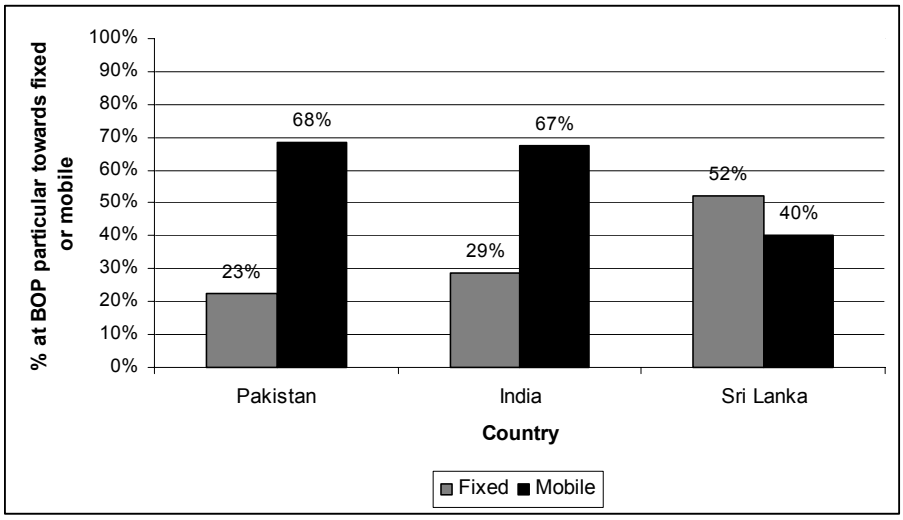
Not only are phones easily accessible now, but access is likely to increase. Of those at the BOP who do not own any kind of a phone (fixed or mobile), the number of people who plan to buy a phone by 2008 is 107 million. This means the percentage of people at the BOP with a phone will be significant – ranging from a low of 50% (or 130 million people) in India to a high of 72% (or 2.9 million people) in Sri Lanka (Figure 5). The total number of people at the BOP with phones will then amount to over 186 million, assuming moderation in government attempts to tax the rapidly growing industry and continued declines in handset and network equipment prices.

Figure 5: Current and Future ownership of Phones at the BOP



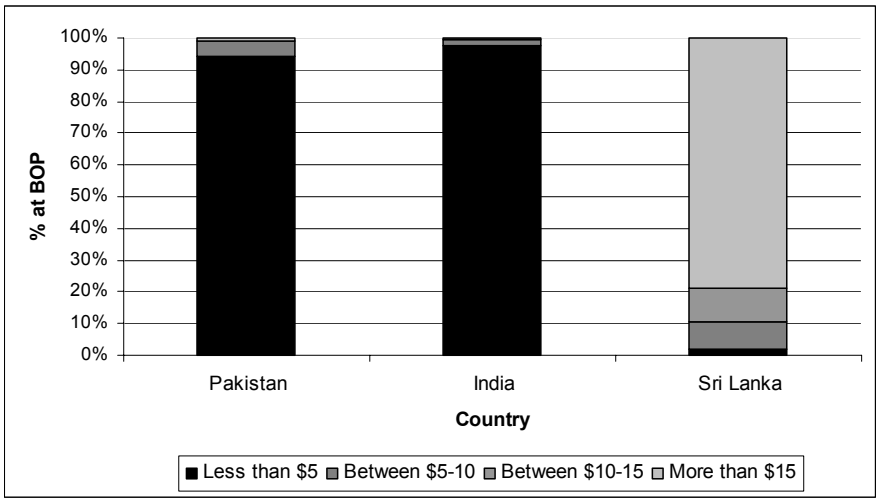
Of those who intend to buy a phone, the majority will purchase mobile phones (as opposed to fixed phones) (Figure 6). This is about 124 million at the BOP with sophisticated mobile devices, and the rest with fixed phones which are increasingly providing "mobile-like" functionality (e.g. fixed-phone penetration in South Asia is increasing due to CDMA phones which, in Pakistan and Sri Lanka provide "limited mobility" and SMS; India has adopted a unified access licensing approach which does not require artificial limitations).

Figure 6: BOP preference for mobile phones (LIRNEasia, 2006)



The same survey shows that those who intend to purchase phones are able to spend up to USD 5 per month on usage charges (Figure 7), which is in line with declining ARPUs (average revenue per user) reported by many South Asian operators.

Figure 7: Expected monthly spend on the new phone service



Source: LIRNEasia, 2006

4.1. Implications of telephone use and ownership on the current model

What does all this mean for telecenters that are catering to citizens at the BOP?

Most telecenters depend on non-Internet services to generate a steady revenue stream. Dominant among these are voice calls. Citizens who may never have used or heard of the Internet still walk into telecenters to make calls, and they pay for it. Indeed many telecenter models depend on voice-call revenues to ensure some level of financial sustainability. In some models, such as the one adopted by e-Sri Lanka, the dependence on voice calls quite high - voice calls were expected to generate about 60% of the total revenue in the early stages (World Bank, 2004).

But the high access and high (current and potential) ownership of phones among the BOP can pose a serious threat to this revenue stream. We showed that the majority of people at the BOP will own their own telephones soon, and use it to make calls. If they do not own one, they will use a relative's or neighbor's phone to make or receive phone calls, as they are doing now. What they will not do is visit telecenters to make these calls. Therefore, the roughly USD 5 that they expect to spend on communication will flow to mobile (or fixed) phone operators, and not to the telecenters. In this scenario, the telecenters stand to lose USD 5 per consumer per month from their revenue stream – this is significant in light of the fact that these calls are among the few solid revenue generating activities for many telecenters.

Citizens using phones at home also mean that they will not be walking in and out of the telecenter as they otherwise might have. This might mean a loss of other revenue as well, due to reduced traffic into the telecenter resulting in less opportunity to market other services.

Individual case studies that list success factors for telecenters in the developed world exist in the literature, and a few address financial sustainability (among others, Wong et al. 2005, Murray and Cornford, 1999). But comprehensive studies on the financial sustainability of telecenters in the developing world are not available. Amin (2005) states that worldwide there are few truly self-sustaining business driven telecenter models, and that few have achieved financial sustainability. We know that it is very difficult for a telecenter to achieve financial sustainability even under "ordinary" circumstances. Increased mobile/fixed phone penetration further threatens that sustainability. Indeed, the challenges of falling revenue faced by Bangladesh's village phone ladies (Shaffer, 2007) and the attrition of "telecenters" (in this case mostly phone resellers) in Senegal are providing early evidence that the space for community access points for telephone services is becoming narrower in light of increased mobile phone penetration (Le Soleil, 2007).

If the communications functions of telecenters are made redundant by the high phone use, and telecenters are made less sustainable a result, what channel do implementers of e-Gov systems use depend on as the front-end to take e-Gov to the BOP?

The solution is to view the phone not as a problem, but as an opportunity.

5. Putting the phone at the center and simplifying: advantages of a different model for e-Gov delivery

5.1. Why does a phone-centric model make sense?

5.1.1. Widely available and used

To people at the BOP, the phone is already a familiar and accessible device – a majority can get to a phone in less than 5 minutes (Figure 3). Many who do not currently own a phone plan to buy one in the near future (Figure 4). The phone they buy is going to be a mobile phone – a device generally more sophisticated than fixed phones, enabling not just voice calls, but SMS, Internet and payment, among other things. In a few months, 124 million of the poorest people in South Asia will be walking around with sophisticated devices capable of making/receiving voice calls, browsing the Internet, sending SMS and doing a host of other activities that are yet being conceptualized. If fixed phones are included, there will be a total of 187 million citizens at the BOP with a phone, fixed or mobile. Fixed phone growth is being driven mostly by CDMA technology, which enables the "fixed" phones to have features of a mobile phone such as SMS and even mobility. Therefore the potential for 187 million people at the BOP to receive the dividends of e-Government is clear.

5.1.2. Available immediately

The mobile is here now, providing an immediate channel for e-Gov delivery, unlike telecenters which are in the early stages of development and are likely to take years to reach a majority of the BOP. The delay, with respect to e-Gov, is in back-end automation of e-Gov systems, not in the delivery channel if the phone is included in the mix.

5.1.3. Unlikely to face sustainability issues:

Mobile phone connectivity is a service provided by companies that are in the business of making profits. People who want to consume phone services expect to, and are willing to, pay for it. The same cannot be said of telecenters that often start as a) pilots and allow free Internet use in order to attract people in the initial stages or b) start with and continue to provide free services in order to achieve higher social objectives at the expense of financial self-sufficiency. The mobile as a channel for e-Gov service delivery will not face the sustainability challenges that dog the telecenters. There is no need to worry about the e-Gov service delivery channel closing down.

5.1.4. Fewer failed e-Gov projects, faster benefits to the citizen

We showed earlier that the traditional model requires re-engineering and automation – a process that is likely to fail 85% of the time, and whose benefits (over cost) is yet to be proven. We argue below that using the phone as the primary channel to reach the BOP enables the e-Gov implementer to avoid many of the problems faced during re-engineering if implementer focuses on providing simple, quick solutions. With fewer e-Gov projects failing and the successful ones being implemented faster, citizens at the BOP (and others) reap the benefits faster. We shall present a possible phone-centric approach to e-Government here.

5.2. What could a phone-centric model look like

5.2.1. Taking a functional view of services provided by government

Government organizations that directly provide a service to citizens (as opposed to those that provide services to other government organizations or businesses) have a number of functions in common. We identify 3 such common functions below, while recognizing there might be other types of common functions across government organizations in a country:

- **Information oriented functions** involve the provision of information to its citizens and is a basic function of government organizations. The information provision can range from simple to the complex:
    - **Simple:** Most government offices have one or more people devoted to providing information to citizens by answering the phone, writing letters/faxes or verbally to the citizens who walk in physically to the office. For example, a citizen may want to know how to obtain a government issued ID card (the process to follow, which forms to fill, what supporting documents are needed).
    - **Complex:** Some government organizations have a more complex information providing function. For example the Tertiary and Vocational Education Commission (TVEC) of Sri Lanka acts as a quality-certifying/accreditation body for the various training programs and diploma courses offered by the private sector. While the certifying process is a G2B service, the TVEC has the responsibility to make this information available to the public. A student who has completed his/her secondary education can call the TVEC and inquire about the certified diploma courses for gem-cutting, for example. When such queries come the TVEC has to be able to provide information on organizations that offer certified courses and advise the student on available options.
- **Payment –functions** are those services that involve a payment from citizen to government or from government to citizen.
    - **Citizen to Government payments:** A number of government organizations will require the citizen to make a payment in order to provide them with a service. For example home owners of a particular municipality will pay annual taxes to the municipal council. The application for a driver license will require the citizen to pay the applicable fee.
    - **Government to citizen payments:** The reverse process (payments from government citizens) is also possible. For example governments pay eligible citizens pension or social service benefits on a weekly or monthly basis.
- **Multi-staged, process oriented functions:** Many citizen services have a series of steps or stages that need to be followed sequentially before a service can be finally provided. Each stage may

require different documents to be filed by the citizen, require approvals by various government officials, and the stages may flow through a number of different government organizations.

Citizen-facing government organization may provide all or some combination of the above functions. A concrete example related to applying and receiving pension benefits in Sri Lanka will illustrate these functions better.

- Prior to applying for the pension benefits, it is possible that the citizen needs to know how he/she goes about it – which forms to fill, which supporting documents to file. This requires the government to perform the information oriented function described above. Then, in order to register for pension benefits the citizen has to complete the pension application, submit it to the government organization he/she is employed at, with the necessary supporting documents and obtain the approval of the employer. This "pension file" containing all documents is then sent to the Department of Pensions, where it goes through a series of other approvals (to check the accuracy of benefit calculations, to check eligibility, etc). Once the approval is given by the Director of Pensions, the pension file is sent to the Divisional Secretariat[1] to which the citizen's home address belongs to. Here the government provides a multi-staged, process-oriented function.
- Monthly calculations for pension benefits are made by the Divisional Secretariat and payments are made each month to the pensioner. Here the government provides a payment-oriented function.

What are the possible methods by which a mobile phone and related technology can be used to make each of the above functions more BOP-friendly, while attempting to avoid the drawbacks of standard e-Gov projects highlighted earlier?

5.2.2. Make each function accessible to the BOP through a phone

Keeping the phone at the center of the solution, it is possible for e-Gov implementers to design services that increase the efficiency and ease with which citizens obtain government services. The objective is to develop solutions quickly so that the BOP can enjoy the privileges of e-Gov now, instead of at some time in the distant future when Internet facilities will become ubiquitous. This means often complicated back-eng re-engineering and the installation of complicated organization-wide IT systems can be postponed in favor of a few simple IT solutions that are introduced in a few stages of the process.

- **Information Functions** – The phone is already being used by citizens as a means of obtaining government information. The basic voice call features of the phone are immediately useful in calling government organizations and obtaining information. But this requires citizens to first find the telephone number of the relevant government organization (and to know which government organization is relevant to the query he/she has). We saw earlier that Sri Lanka has already moved towards solving this problem by aggregating all of the Information-Providing functions of government into one Government Information Center (GIC) which is accessible to all citizens by dialing 1919 from any phone. All 3 major languages are catered for by hiring multi-lingual call-center operators. In our pension-related example presented earlier, the citizen can call the GIC and obtain the requirements for pension eligibility. If needed she can also obtain the telephone number or address of the Pensions Department, so that he can call the Department directly should he need further advice (instead of information). The introduction of the call center did not require re-engineering of government departments, did not lead to job loss, and is popular with citizens. Data from just 6 moths of operation show that citizens with phones used the GIC's services extensively – the provinces with the highest number of phones originated the highest number of calls[2] (Samarajiva & Galpaya, 2006). At present, the GIC is arguably the most "used" citizen service in the e-Sri Lanka e-Gov portfolio.

[1] Over 325 Divisional Secretariats across the island act as the governments agents regionally, and carry out a number of tasks on behalf of various government organizations.
[2] The only exception is the war-tone Northern Province which generated very few calls to the Government Information Centre.

Of course it is possible already for mobile phones to browse the Internet. Therefore if the government were to provide a website that contains the information and make it readable via a mobile phone (web sites that are Web Standards compliant enable access from multiple devices), the BOP who are literate can browse the page from their mobile phones. Phone screens are small, and bandwidth is limited – this will in fact force designers of government web-pages to provide the bare minimum (and absolutely necessary) information to the public, and avoid heavy graphics and redundant information (e.g. "message from the minister" type links) that are common in government department web-sites today.

For the delivery of more complex information, it is possible to think of a combination of the phone and other methods. In the TVEC example given earlier, Automated Voice Recognition (AVR) technology can be used to provide citizens with basic information on certified organizations that offer a particular professional certification course such as "gem-cutting" (the citizen dials well publicized a number, speaks the words "gem cutting" to the AVR system, and listens to a list of course names and the institutions that offer the course). But it is likely that further information is needed – for that, the TVEC can make available printed information. The citizen can request the information to be mailed to him/her using the same AVR system, or by using SMS to send the address.

- **Payment-Oriented Functions** – Across the developing South, mobile phone payments are being used to transfer money between people, and from people to business. The vast numbers of commercial mobile-finance solutions from across the world targeting the un-banked and those at the BOP is well documented. Mobile-finance is predicted to be the next big shift in the mobile and financial services sectors. For example, Wizzit in South Africa and SMARTmoney in the Philippines are just two in a series of emerging product offerings combining financial transactions and the mobile phone.

  The g-Cash PayBIR service is supported by the Philippine government's Bureau of Internal Revenue (BIR) and enables the payment of taxes using mobile phones. Payments of up to P10,000 (approximately USD 180) towards a citizen's income tax, fines or penalties or regular documentary stamp taxes can be paid with a simple SMS. An SMS "receipt" sent by the BIR provides confirmation that the payment was recorded/received (ComputerWorld, 2006)

  The g-Cash PayBIR example is however a rare instance of an Asian government (as opposed to private sector organizations) conducting financial transactions using mobile phones – similar examples are difficult to find outside of the Philippines, the SMS capitol of the world. This is ironic, since phones can achieve many of the social objectives of e-government easier and faster than the alternatives available to governments in developing Asia. We pointed out earlier that in India and Sri Lanka had less than 46 million credit card users, none of them at the BOP, Compare that with 85 million at the BOP in these two countries who already have or will have a transaction-capable mobile phone by 2008 in India and Sri Lanka, or with the 124 million in India, Sri Lanka and Pakistan.

  In order to accept payments via phones from citizens, policy changes may be required in some countries. But we argue that the cost of introducing new policies/legislation is easily justified by the large populations that will benefit from the service.

  Mobile phones may not provide an obvious solution to the reverse process (payments from governments to citizens), i.e., it is difficult to imagine most governments transferring a citizens social security benefits into mobile credit in his/her phone, especially when the mobile phone is likely to be operated by a private firms. But even in the case of social security or pension payments (which may continue to be paid to bank accounts or in cash, at lease in the near future) the mobile has a role to play. A simple SMS can be sent to all pensioners confirming that their pension is ready for collection, or that it was deposited to the designated bank accounts.

- **Multi-Staged functions:** Multi-staged functions (such as the pensions application/registration process mentioned earlier) are the type that will benefit most from traditional re-engineering and automation. Connecting up the government offices involved in the pension registration process and

introducing a new system that process the applications without introducing errors at each stage will increase overall efficiency significantly. However, as we know these projects take time, and are risky. But once again, the phone can provide significant benefits to the citizen. In the case of the Sri Lankan pension applicant, imagine if the relevant government department kept him/her appraised of the stage at which his/her application is at. An SMS can inform the applicant that the employer approval was obtained and the file has been sent to the Pensions Department. A subsequent SMS might inform the applicant that he/she had forgotten to sign a particular form, and therefore has to visit the Pensions Department in order to do that. The status reporting via SMS does not require re-engineering. The manual "pension file" will still travel from one stage to the next (or one government organization to the next). All that happens is that the applicant provides a mobile phone number, and at each stage a clerk uses a very simple web service to send a standard SMS (web sites that automate the sending of messages to cell phones are extremely cheap and widely available, and often can handle local language fonts. See for example www.clickatell.com.

This is in fact what happens today in the stage of Gujarat in India. The state, in partnership with mobile operator Hutch, offers an SMS based service to citizens who apply for an Indian passport. According to Mukherjee (2003) previously over 900 citizens queued outside the Regional Passport office each day. About 300 of them were simply accompanying individuals. Of the remaining 600, about 250 come from different corners of the state to simply inquire about the state of their passport application. Through the new SMS-based service, a citizen who sends an SMS containing the file number is kept informed about the progress (or lack thereof) of the passport application at each of the seven stages that it has to go through. The success is not due to large-scale re-engineering (if that was done, one hopes the 7 stages of the passport application process would have been reduced to one with fewer stages!), but due to adding simple technology and SMS services.

5.2.3. Find the quick solution (not the ideal solution) for now

The goal of phone-based e-Gov systems the QUICK provision of services to citizens. As such, it is vital that the simplest possible solutions be identified. These will often (indeed almost always) not lead to fully automated backend integration. That is in fact the goal- to make information and services accessible to citizens through existing channels (the phone) without causing huge disruptions at the back-end. In fact solutions such as the above can succeed if they do not require radical changes in behavior on the part of government employees. We argue that phones can help "automate" parts of government without threatening the job security, or changing the job functions (or with minimal changes to the jobs) of government employees. In fact, adding mobile-enabled information, or partial access to government services through mobile phones may require more employees at the back end, not less (for example, to entering the passport information into a database used to generate SMSs at each stage requires labor that wasn't utilized in the manual process because no database was used). Re-engineering the system would most likely have resulted in less labor. But the (partial) solution of using the mobile will service the citizen's need earlier, while waiting for the perfect e-Gov system.

Fully automated re-engineered systems are a must in the long term. But citizen confidence in government can be greatly increased by using the phone to provide the easy to implement, quick solutions such as the ones highlighted above. These solutions enable the government (and its employees) to provide a faster and better service to its citizens. If the citizens can be satisfied with these quick-win solutions, the government employees too may be encourage to undertake further change-oriented behavior. The "future risk" of projects failing and employees losing faith in e-Government may be lessened, thereby increasing the long-terms success rate of e-Gov projects.

5.2.4. Use the price advantages and competencies already being developed in Asia to service the public

The economics of the GIC example presented above (and similar call centers operators during day time hours) are favorable to Asia. Sri Lanka India and many other countries in developing Asia are in the midst of developing a viable call center market that provides outsourced call handling services to clients in the developed countries. These call centers service clients in the US or UK, which means they work

US/UK working hours which are normally evening or late night hours in Asia. As a result, there is excess capacity at call centers which can be obtained (by government) for rates that are significantly cheaper than otherwise would have been available. Not only that, call center operators who are trained in the best forms of customer service can be found in Asia due to the boom in outsourced services. Both these advantages (or emerging regional core competencies) can and should be used to serve the citizens of emerging Asia. This certainly was the case with the GIC call center in Sri Lanka.

6. Drawbacks of relying on mobile phones

The model above proposes the phone as the delivery channel and it proposes picking some "quick" wins for automation. But it's not foolproof.

- Government institutions can use the phone for delivery, but undertake re-engineering efforts that are large or as complicated as the typical e-Gov projects. This will ensure that the failure rate of projects remains the same as before. The goal is to not get on the "m-Government" bandwagon which is now the popular buzz in western e-Government initiatives. Or to do e-Gov first, then do m-Gov on top of it. The goal is to pick the "quick" wins, and to avoid process re-engineering at a large scale, and provide some services quickly. The goal (at this stage) is not to reduce human involvement in government process by automation.
- Phone based services are accessible to the BOP because new technology doesn't have to be learned – citizens used technologies they already know, such as voice calls. However, it has been suggested that citizens at the BOP may be reluctant to call government officials due to (perceived) class barriers or (actual) language barriers. In such situations, SMS or automated voice recognition systems need to be used to ensure that the citizen is not intimidated by the prospect of talking to government officials
- Phones can make government services accessible, as was the case with the PNP Text 2920 system in the Philippines that enabled citizens to report crimes at the touch of several buttons via SMS. But though the crime reporting procedure changed, but police procedures for tracking/catching the criminals/crimes didn't change. As a result, citizens report having lost faith in the system due to poor follow up by the police. Arguably, the police response time in tracking/fighting crime didn't change from what it was previously. But the increased ease of SMSing complaints created the expectation that the follow-up by the police too would also be expedited. Such increased expectations (specially by automating just a part of a government services) can result in loss of faith and create the environment for project failure in the long term.
- It is possible that attention will be drawn away from thorough re-engineering by some government organizations after they achieve quick wins through our recommended approaches of getting quick-wins through mobile phones. On the delivery side, reformers may not push hard for broadband rollout assuming that the Internet access problem is 'solved'. Reaching such complacency is dangerous in the long run because sustainable broadband delivery models as well as fully re-engineered government process are both necessary.
- Even if the delivery problem is solved (through mobile) and the project failure problem is limited (through focus on quick wins/avoidance of large-scale re-engineering), mobile-centric e-Gov can still fail. For example, Signo et al (2007) cites lack of publicity/awareness among the public about the PNP Text 2920 service for the low usage and ultimate lack of clear success of the service.

7. Conclusions

We presented evidence that the Internet-dependent delivery of e-Government has significant disadvantages when attempting to reach the BOP in South Asia in the near future. Even with popular telecenter movements in India, Pakistan and Sri Lanka, the reach of the Internet is minimal so far. Moreover, e-Gov projects that attempt to radically change the behavior of government organizations (and its employees) often fail.

We then presented evidence that the phone is currently (or soon will be) available to a majority of the BOP in South Asia. We showed that the phone is capable of providing information, performing financial

transactions and conducting other interactions between government and its citizens. Therefore we claim that the phone is a good tool for delivering e-Gov to the BOP now. Telecenters and Internet will take time to reach a majority of the BOP, but phones enable them to bridge the digital divide today.

We finally presented examples on how a functional view of government services can help implementers design phone-based e-Gov services that benefit the BOP. These solutions can be quickly implemented and are likely to succeed because they do not require government organizations to change radically. Instead, phone-centric e-Gov interventions deliver value to citizens of the BOP now, making them positively oriented towards their governments. Seeing successful e-Gov projects bringing value to citizens, the government employees themselves may be more inclined to undertake further re-engineering, thereby increasing the likelihood of the success of future (larger) e-Gov projects

The model present is by definition a transitionary one – it is a way to include the excluded (i.e. those at the BOP) and to provide a way for those at the BOP to reap the benefits of e-Gov. However the model (of simple solutions provided via the phone) is not the ultimate solution. Broadband rollout to the BOP is needed as are thoroughly re-engineered and automated government processes. Finding sustainable telecenter models are also a must. All of this will take time. In the end, the state of equilibrium will most likely come through a hybrid of the two: phones as well as the (broadband based) traditional internet being used to deliver e-Gov services to the BOP. But until such time, the phone alone can take e-Gov implementers a long way in reaching the BOP through simple, easily implantable solutions.

References

Amin, D. (2005). Village information kiosks: a commercial view. In H. Badshah, S. Khan & M. Garrido (Eds.), *Connected for development: information kiosks and sustainability*. (pp. 117 – 125). New York: United Nations Information and Communication Technologies Task Force.

Ansari, S. (2006). Telecenters and Community Resource and Information Centers in Pakistan. Retrieved August 23, 2007 from http://ifossf.org/files/Telecenters%20in%20Pakistan%20Volume%201.pdf

Asia Pacific Development Information Programme. (2007). ICT4D Case Studies. Retrieved August 20, 2007 from the World Wide Web: http://www.apdip.net/resources/case/egov/

Central Bank of Sri Lanka. (2007). Statistics. Retrieved August 22, 2007 from the World Wide Web: http://www.cbsl.gov.lk/pics_n_docs/_cei/_docs/ei/mei_2007june.pdf

Chibber, N. K. (2007). Building a telecoms bridge across digital divide. *Public Sector Technology and Management, 4.1*, 28 – 31.

Clickatell. (2007). Retrieved August 26, 2007 from the World Wide Web: http://www.clickatell.com

Colle, R. (2000). Communication Shops and Telecenters in Developing Nations. In Gurstein, M. (Ed), Community Informatics: Enabling Communities with Information and Communications, Technologies. Hershey, PA: Idea Group Publishing.

ComputerWorld. (2007). Computerworld Honors Program Case Study: Globe Telecom. Retrieved August 23, 2007 from http://www.cwhonors.org/case_studies/GlobeTelecom.pdf.

Conroy, C. (2006). Telecenter Initiatives in Rural India: Failed Fad or Way Forward? Retrieved August 22, 2007 from http://www.nri.org/news/documents/wp4_telecentres_review_dec2006.pdf

Drishtee Foundation. (2007). Retrieved August 20, 2007 from the World Wide Web: http://www.drishteefoundation.org/

ESOMAR. (1997). Standard Demographic Classification. A System of International Socio-economic Classification of Respondents to Survey Research. Retrieved August 23, 2007 from http://forum.gfk.ru/filestore/0082/0019/516/stand_democlass97.pdf

Grimsley, M. & Meehan, A. (2007). E-Government information systems: Evaluation-led design for public value and client trust. *European Journal of Information Systems*, 16, 134 – 148.

Gyandoot. (2007). Dhar District Development Initiatives. Retrieved August 20, 2007 from the World Wide Web: http://www.gyandoot.nic.in/dhar_district/development.html

Heeks R. and Kenny C. (2002), ICTs and development, in: ICTs and Development, *Proceedings of the IFIP WG9.4 Conference 2002*, S. Madon and S Krishna, eds, Bangalore, India, 2002, 29-44.

Heeks, R. (2002). Information Systems and Developing Countries: Failures, Success and Local Improvisations. *Information Society*, 18(2), 101-112.

Heeks, R. (2003). Most eGovernment for development projects fail: How can risks be reduced? IDPM i-Government Working Paper No. 14, University of Manchester, UK. Retrieved August 25, 2007 from http://unpan1.un.org/intradoc/groups/public/documents/NISPAcee/UNPAN015488.pdf

ICTA. (2007). ICTA launches Nenasala at Foreign Employment Bureau. Retrieved August 25, 2007 from http://www.icta.lk/insidePages/news&event/010307whatsnew.asp

ITC. (2007). Retrieved August 20, 2007 from the World Wide Web: http://www.itcportal.com/ruraldevp_philosophy/echoupal.htm

Kolsaker, A. & Lee-Kelley, L. (2007). G2C e-government: modernisation or transformation? *Electronic Government, an International Journal, 4 (1),* 68 – 75.

Le Soleil (2007). Survie des télécentres et télé-services au Sénégal. L'Unetts invite l'Etat à mettre en place un cadre réglementaire adapté. Retrieved August 24, 2007 from http://www.lesoleil.sn/article.php3?id_article=27464

LIRNEasia, (2006). Teleuse at the Bottop of the Pyramid. Retrieved August 15, 2007 from http://www.lirneasia.net/projects/current-projects/bop-teleuse/

Moon, M. J. (2002). The Evolution of E-Government among Municipalities: Rhetoric or Reality? Public Administration Review, 62 (4), 424 – 434.

Mukherjee, A. (2003). Passport status information on SMS. Retrieved August 23, 2007 from http://timesofindia.indiatimes.com/articleshow/45603653.cms

Murray, W. & Cornford, D. (1999). Telecottage and telecentre survey 1998. Retrieved August 22, 2007 from http://www.itu.int/ITU-D/univ_access/seminar/buda/papers/bm/TCA-98-SURVEY.html

Pakistan Telecom Authority. (2007). Media Center. Retrieved August 20, 2007 from the World Wide Web: http://www.pta.gov.pk/index.php?option=com_content&task=view&id=890&catid=94&Itemid=1&bold=ghar

Rebello, J. (2006). Card payments are on the growth. Retrieved August 25, 2007 from http://www.dnaindia.com/report.asp?NewsID=1067791

Samarajiva, R. & Galpaya, H. (2006). Comment [on Sri Lanka case studies], Pro-Poor E-Governance, Regional Development Dialogue, 27 (2). United Nations Centre for Regional Development, Nagoya, Japan.

Santos, R. & Heeks, R (2003). ICTs and Intra-Governmental Structures at Local, Regional and Central Levels: Updating Conventional Ideas. Retrieved August 27, 2007 from http://unpan1.un.org/intradoc/groups/public/documents/NISPAcee/UNPAN015495.pdf

Shaffer, R. (2007). Unplanned Obsolescence. Retrieved August 23, 2007 from http://www.fastcompany.com/magazine/118/unplanned-obsolescence.html

Signor, C., Dela-Rosa, M., Buenaventura, V., Valera, I., Domingo, E. (2007), PNP TEXT 2920 Service: A Communication Perspective on M-Governmetn in Philippine Context, paper accepted for presentation at the 2nd CPRSouth conference, Chennai, December 2007

Smart. (2007). Financial services. Smart money. Retrieved August 22, 2007 from the World Wide Web: http://www.smart.com.ph/Corporate/Services/SmartMoney/

Stanforth, C. (2006). Analysing eGovernment Implementation in Developing Countries Using Actor-Network Theory. IDPM i-Government Working Paper No. 17, University of Manchester, UK. Retrieved August 26, 2007 from http://www.sed.manchester.ac.uk/idpm/research/publications/wp/igovernment/documents/iGWkPpr17.pdf

Synergy Strategies Group. (2007). Center-in-a-Box. Retrieved 25 August, 2007 from http://www.synergystrategiesgroup.com/caseStudies/CaseStudy1_CenterInABox.pdf

Tarahaat. (2007). About us. Retrieved August 20, 2007 from the World Wide Web: http://59.176.72.70/tara/aboutusEnglish

Torres, L., Pina, V. & Acerete, B. (2006). E-Governance Developments in EU Cities. Reshaping Government's Relationship with Citizens. Governance, 19 (2), 277–302.

UNPAN, (2005). Global e-government readiness report 2005. Retrieved August 26, 2007 from http://www.unpan.org/egovernment5.asp

West, D. (2004). E-government and the Transformation of Service Delivery and Citizen Attitudes. Public Administration Review, 64 (1), 15–27.

Wizzit. (2007). Retrieved August 22, 2007 from the World Wide Web: http://www.wizzit.co.za/
Wong W., Hanchanlash J., Harris R., Chatikavanij V. & Barr D. (2005). Thailand Canada Telecenter Project. In H. Badshah, S. Khan & M. Garrido (Eds.), Connected for development: information kiosks and sustainability. (pp. 179 – 190). New York: United Nations Information and Communication Technologies Task Force.

World Bank, (2004). Project Appraisal Document for e-Sri Lanka. Retrieved August 22, 2007 from http://www-wds.worldbank.org/external/default/WDSContentServer/WDSP/IB/2004/09/10/000009486_20040910112659/Rendered/PDF/28979a.pdf