



Session Title:

Mobile Use at the Bottom of the Pyramid

**Teleuse at the Bottom of the Pyramid:
Findings from a Five-Country Study**

**Ayesha Zainudeen, Nirmali Sivapragasam, Harsha de Silva, Tahani Iqbal and
Dimuthu Ratnadiwakara**

LIRNEasia

12 Balcombe Place, Colombo 08, Sri Lanka

+94 77 305 5486, +94 11 267 1160

Fax: +94 11 267 5212

November 2007

Research supported by IDRC



Abstract

This paper looks at telecom use at the bottom of the pyramid, or BOP, in emerging Asia, where much of the 'next billion subscribers' are expected to come from. It explores the potential for new customers and issues of affordability at the BOP. The findings reveal potential for more than 140 million new connections at the BOP in Pakistan, India, Sri Lanka, the Philippines and Thailand alone, with almost two thirds being mobile connections; this will have major implications for the uptake of emerging mobile applications. This paper also looks at the benefits, as perceived by current owners, of phone ownership at the BOP, as well as the 'gendered' use of telecom at the BOP, revealing a gender divide in India, Pakistan and to a small extent in Sri Lanka too. The policy implications of the findings are briefly examined.

Acknowledgements

The authors gratefully acknowledge the valuable contributions of the following persons in the development of this article and the underlying analysis: Shaheen Cader of AC Nielsen Lanka (Pvt.) Ltd., Anu Samarajiva, Rohan Samarajiva and Shamistra Soysa of LIRNEasia, and Laurent Elder of the International Development Research Centre of Canada (IDRC). This work was carried out with the support of the IDRC.

1.0 Introduction

The enormous potential at the 'bottom of the pyramid' or BOP (Prahalad 2004) has been much talked about. In the telecommunications sector, companies are beginning to understand this burgeoning market, and are adapting products and business models to better serve its needs. In the telecom sector, 'any-amount' electronic top-ups on prepaid mobiles are one such example, akin to the 'sachet' strategy adopted by many in the fast moving consumer goods industry in developing countries (Kishore 2003).

The Asia-Pacific region is one of the world's fastest growing telecom markets. It is widely accepted that the 'next billion subscribers' will come from emerging markets, particularly India, China and other emerging Asian countries. Given that South Asia contains the largest number of poor people, it is therefore implicit that many of these new subscribers will come from the BOP in Asia, especially South Asia.

This paper reports the key findings from "Teleuse@BOP", a five-country study of the use of telecom services at the BOP in emerging Asia. The paper will provide a deeper understanding of the use of telecom services at the BOP, particularly among the vast majority who do not own their own phones but are considering ownership. This study, anchored on C.K. Prahalad's argument that there is indeed "fortune at the bottom of the pyramid" (Prahalad 2004), looked at the use of telephones among the lower socio-economic strata or BOP within each country. The study revealed a combined potential for close to 140 million new telephone connections at the BOP between mid-2006 and mid-2008 in the five countries studied alone; most of these will be mobile connections. This will have knock-on impacts on the uptake of emerging technologies becoming available through mobile and SMS platforms, such as SMS-based remittances, voting and banking.

This paper is divided into several sections: Section 2 looks briefly at the methodology used in the study; Section 3 looks at the key findings of the study in four areas; Section 4 briefly considers some of the policy implications for serving the 'next billion' in these markets; and Section 5 presents conclusions.

2.0 Methodology

This paper is based on a study conducted in mid-2006 in five emerging Asian countries, namely Pakistan, India, Sri Lanka, the Philippines and Thailand. The BOP was defined as Socio-Economic Classification (SEC) groups D and E, in accordance with the classification system commonly used in market research which classifies people as belonging to groups A (the highest) to E (the lowest) based on the education and occupational status of the chief wage earner of the household. A small sample of SEC groups A, B and C were also taken in each country for comparison.

Telephone users, the target group of the study, were defined as those who had used a phone (their own or someone else's, paid for or free of charge) during the preceding three months. Male and female telecom users between the ages of 18 and 60 from rural and urban locations were studied.

Quantitative and qualitative research was undertaken. The quantitative module consisted of more than 8,600 face-to-face interviews using a structured questionnaire, and a diary placed to accurately record usage patterns among half of the sample.

Households were selected randomly, and within selected households, respondents were selected randomly. The sample was designed to represent the BOP in each country so that the findings could be projected back to this segment in each country.

A multi-stage stratified cluster sampling by probability proportionate to size (PPS) technique was used to select the target number of urban and rural centres. After determining the number of centres to be selected from each cell (strata in respective provinces), urban and rural areas were selected again using PPS on a constant population interval on geographically ordered centres within each cell.¹ In each selected centre, a common place such as a road, park, hospital, etc. was designated the starting point for contacting households.² Only one respondent was selected from each household using the KISH grid (random number chart) to ensure random selection. Within each country, data was weighted by gender, province group/zone and SEC group (A, B, and C vs. D and E) to correct over- or under-sampling in certain areas and socio-economic groups.³ An overview of the sample size and composition is given in Table 1.

Table 1 – Quantitative sample overview

Country	Population	Sample Size			Error margin at 95% CI
		SEC A, B, C	SEC D, E	Total	
Pakistan	166 million	731	1,081	1,812	3.0%
India	1 billion	652	3,348	4,000	1.5%
Sri Lanka	16 million (excl. 2 prov.)	596	481	1,077	3.0%
Philippines	87 million	92	1,008	1,100	3.0%
Thailand	65 million	348	352	700	7.0%
Total sample size:				8,689	

The qualitative module consisted of six extended focus group discussions (EGDs)⁴ in each country to enrich the findings of the quantitative survey. Each had an average of eight respondents, including telecom users as well as non-users.⁵ All groups were conducted in the local language(s).

3.0 Key findings

This section looks at some of the key findings that have emerged from this study. It begins with overall levels of access and ownership among telecom users at the BOP, then focuses on those who did not own their own phone and their prospects of getting connected. The next subsection looks at the perceived benefits that accrue to phone owners, pointing out why ownership is important and why access alone is not enough. Finally, the last sub-section looks at the key findings relating to the 'gendered' use of telecom at the BOP, in terms of both access and use.

¹ For this purpose, the cumulative population of all geographically ordered centres was calculated within urban and rural areas of each province. To find out the sampling interval the total population of these centres was divided by the required number of cities to be sampled from that cell. To select the first centre, a random number was generated. The centre where that random number fell was the first selected centre. By adding the sampling interval to that random number, the next centre was selected and so on.

² Around each starting point, a maximum of ten interviews were conducted. The number of starting points was determined in accordance with the total number of interviews to be conducted in each center.

³ As a result of weighting by SEC in some countries the SEC A, B, and C weighted sample size becomes larger than the SEC D and E weighted sample size where the former group forms a higher proportion of the country's population.

⁴ EGDs are longer than an average focus group – three hours or so as opposed to one and a half to two hours. The advantage is that respondents are not rushed in an EGD.

⁵ Someone who has not used any form of telecommunication during preceding three months.

3.1 Access and ownership: Has universal access been achieved?

The Asia-Pacific region is one of the world's fastest growing telecom markets. While the GSM Association claims that the next billion subscribers will come from developing countries, a 2006 study by Informa Telecoms & Media forecasted that 45% of the global growth by the end of 2006 would come from the Asia Pacific. Of this, 25% was expected to come from India, Pakistan, the Philippines and Thailand – four of the five countries considered in this study (DigiTimes 2006). Similarly, a recent report by Pyramid Research estimates that globally, between 2006 and 2010 the number of subscriptions will grow by 1.4 billion, raising the total base of mobile subscribers from 2.8 to 4.2 billion. Of this, it is estimated that 87% will come from emerging Asian countries, with India contributing the largest share, 294 million new connections (Arathoon 2007).

The current study revealed that access to a phone is extremely high in the countries studied: of all those contacted through the random selection process, more than 90% in all five countries had used a phone at least once during the preceding three months (see Table 2). More specifically, more than 90% had made or received a call from any phone in the last three months; this was the criteria for participating in the study. If for example 98% of the population of Pakistan has used a phone in the last three months, then it can be inferred that the percentage of those at the BOP who have used a phone in the last three months will also be high.⁶

Table 2 – Access to a phone

	South Asia			Southeast Asia	
	Pakistan	India	Sri Lanka	Philippines	Thailand
Accessibility (used a phone in the preceding 3 months)	98%	94%	92%	93%	95%
<i>Source: Outer sample</i>					

This finding is in sharp contrast to the much quoted claim that “half the world's population have never made a phone call”,⁷ which Kelly rightly states seems to be a claim that has been “frozen in time” (2005, p.26). This is, however, more in line with ITU estimates that about one fifth of the world's population do not have access to telecommunication (Kelly, 2005).

As Figure 1 shows, there are large contrasts in the primary access modes used at the BOP between the South Asian and Southeast Asian countries. Phone ownership was less prevalent in the former, resulting in a higher reliance on shared access modes (either private or public), while in the latter, ownership (specifically of mobiles) is more prevalent, and shared access modes were used less frequently at the BOP. ‘Ownership’ of mobiles was considered at an individual level, while ownership of fixed phones was considered at a household level.

Among non-owners at the BOP in the five countries, the majority can get to a phone in less than 10 minutes (see Figure 2).

⁶ The separate numbers for the BOP are not available.

⁷ See for example,

<http://www.unrisd.org/unrisd/website/newsview.nsf/0/34329FCA3B21925D80256B7B003DCF2A?OpenDocument>

Figure 1 – Primary access mode (most frequently used) at the BOP (%)

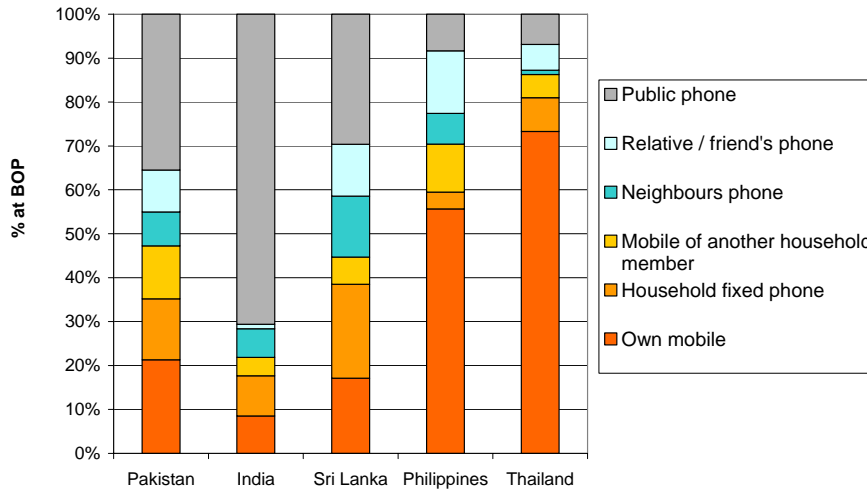
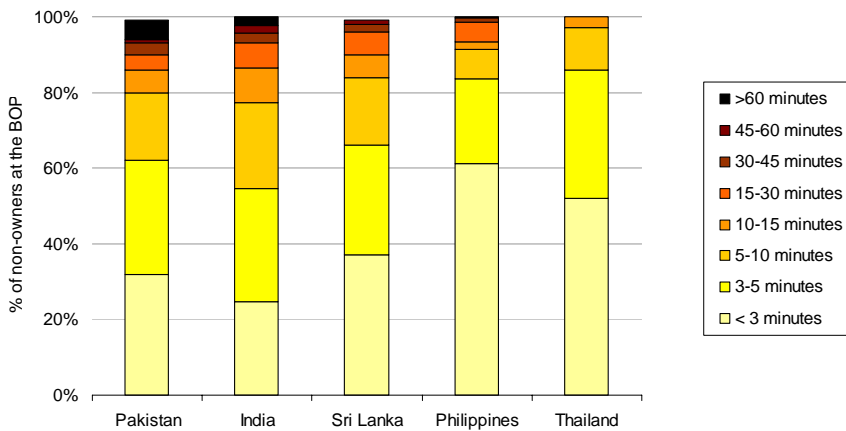


Figure 2 – The time it takes non-owners to reach the nearest phone



Based on these findings, it could be inferred that universal access has almost, if not fully, been achieved in these countries. Even so, while this is a significant achievement, this is not the end of the game. While users at the BOP seem to have access to many different modes of telecommunication (personal mobile phones, household fixed phones, public phones, neighbours' phones, relatives' and friends' phones, etc.), as discussed earlier, ownership patterns vary significantly across the region, with the South Asian countries lagging far behind.

3.2 Potential subscribers at the BOP: The next billion?

Among those at the BOP who did not own a phone at the time of study, many indicated that they were planning to buy a phone within the coming two years, i.e., between mid-2006 and mid-2008, as Table 3 shows. The findings indicate that there are close to 140 million people at the BOP in the five countries covered by this study who could theoretically become new telephone owners by mid-2008. This estimate is not inconsistent with the estimates of the GSM Association and others who believe a large proportion of new growth worldwide will occur in these five countries. Although these prospective customers may already be contributing to the revenues of operators

(through the use of other peoples' phones), it is estimated that in Sri Lanka, for example, people would make almost twice as many calls if they obtained a mobile phone, and more than twice as many if they obtained a fixed phone. However, several issues pertaining to making phone instruments affordable at the BOP will need to be addressed in order to capture this potential. As depicted in Table 3, the expected volume in South Asia will be far greater than that of Southeast Asia.

	South Asia			Southeast Asia	
	Pakistan	India	Sri Lanka	Philippines	Thailand
Plan to buy a phone between mid-2006 and mid-2008 (% of BOP)	53%	38%	53%	42%	38%
Projected horizontal growth (non-owners joining market), millions	26.0	79.7	1.3	6.5	1.3
Projected vertical growth (current owners getting additional connections), millions	7.3	3.6	0.3	11.9	2.8
Projected new connections at BOP, millions	33.3	83.4	1.7	18.4	4.0
Projected total new connections at the BOP across all five countries, millions	140.7				

Most of these new customers will have monthly household incomes of less than USD 5 per day, although a considerable number in India will come from households that earn less than USD 2 per day. With the exception of Sri Lanka, the majority of respondents planning to get connected said they intended to invest in mobile connections (see Table 4), which could amount to almost 100 million of the new connections. Given that more than 90% of current mobile owners at the BOP in all five countries are prepaid subscribers, it is likely that a large proportion of these new mobile connections will also be prepaid.

	South Asia			Southeast Asia ⁸
	Pakistan	India	Sri Lanka	Philippines
Fixed	23%	29%	52%	8%
Mobile	68%	67%	40%	91%
Have not decided yet	9%	4%	7%	1%

The question then remains, how do we convert non-owners into owners, to allow them to avail of the benefits of access? This subsection looks at the potential new subscribers and the barriers to ownership, as identified by current non-owners at the BOP in the five countries.

Among non-owners, the key barrier to ownership is affordability, with more than 70% of non-owners in each country rating non-affordability as the top reason for not owning a phone. Although overall the BOP (owners plus non-owners) can afford to use a phone,⁹ the majority cannot afford to own one; they have to be content with using someone

⁸ Thailand was dropped from this analysis because the base was too small to analyze at a disaggregated level

⁹The BOP (owners plus non-owners) rate the cost of using telecom services (on a five-point scale) as "somewhat affordable" to "affordable".

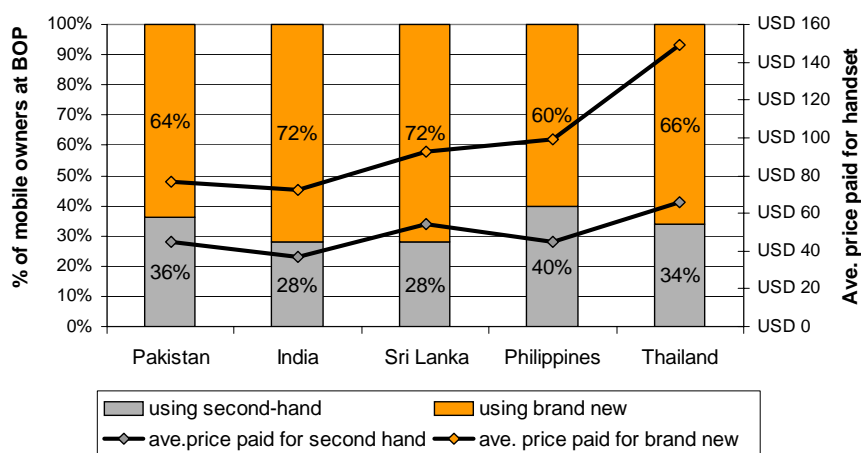
else's. Surprisingly, affordability is also an issue for non-owners at the 'top' and 'middle' of the pyramid (SEC groups A, B and C).

In terms of getting connected, there appears to be a significant gap between the expected cost and what the BOP can afford. While those at the BOP expected a telephone to cost a certain amount, the amount they can afford to pay does not necessarily reflect the ability to purchase a unit at the expected price, as seen in Table 5. This is true in the case of all four countries examined in the table.

Table 5 – Initial cost of obtaining a phone: Expectations vs. affordability				
	South Asia			Southeast Asia ¹⁰
	Pakistan	India	Sri Lanka	Philippines
Amount that prospective owner expects a new phone connection to cost				
Below USD 25	79%	78%	10%	10%
USD 26-55	18%	18%	21%	39%
USD 56-85	2%	3%	29%	28%
USD 86-115	1%	0%	22%	18%
Over USD 116	0%	0%	19%	7%
Amount that prospective owner can afford to pay to obtain a new phone connection				
Below USD 5	94%	97%	69%	70%
USD 5-10	5%	2%	26%	29%
USD 11-15	0%	0%	3%	0%
USD 16-20	1%	0%	1%	0%

Perhaps this cost barrier is a significant reason why about one third of the BOP mobile owners surveyed were using second-hand handsets, as seen in Figure 3. The average price paid for such recycled phones is about half that of brand-new ones. Although the study did not consider the smuggled phone phenomenon (where import duties and sometimes even government taxes are avoided), the industry believes a significant proportion of mobile instruments in particular are brought into countries through such illegal means, thus making them cheaper than official selling prices.

Figure 3 – Use of brand-new and second-hand handsets and price paid for same



¹⁰ Thailand was dropped from this analysis because the base was too small to analyze at a disaggregated level

When it came to the cost of *staying* connected, i.e., average monthly expenditures, expectations and affordability were better aligned than with respect to the initial costs, seen earlier. Around 90% of non-owners in India and Pakistan expect monthly expenditure on telecom usage to be less than USD 5, and around 30% in Sri Lanka and 40% in the Philippines expect their monthly expenditure to be between USD 5 and USD 10. Non-owners at the BOP can afford to pay less than USD 5 per month in Pakistan and India and less than USD 10 in Sri Lanka and the Philippines. These numbers are broadly comparable to the monthly ARPU (average revenue per user) figures for prepaid connections –which form the majority of mobile connections – of around USD 5.¹¹

3.3 Why is ownership important? Perceived benefits of access to telecom

The previous subsections showed that although many at the BOP do not own their own phones, most have some kind of access. So why is this not enough? Why is ownership important? Many studies over time have concluded that access to telecom has a fairly strong impact on economic growth and development. At a macro level, Hardy (1980), Cronin et al. (1991, 1993), Parker and Hudson (1995), and Roller and Waverman (2001) provide evidence for links between telecommunications and economic growth and development in the developed world. More recently, Waverman et al. (2005) provide evidence for such links in the developing world, demonstrating that in developing countries, for every additional 10-percentage-point increase in mobile penetration, annual GDP growth increases by 0.6%. These are just a few examples of such studies. A wealth of anecdotal evidence is available to demonstrate income benefits on an individual level, but few of these findings have been empirically reinforced at this micro-level – although theoretically the benefits are large.¹² This study also looked at the benefits of having direct access (i.e., owning a phone) as perceived by the owners themselves. The benefits were assessed on a five-point scale, in terms of the impact that direct access has had on the following aspects of their life:

- i. efficiency of daily activities
- ii. financial (the ability to earn more using the phone or save a certain expense that would have been incurred without the phone)
- iii. family and social relations
- iv. ability to act in emergencies

The mean responses are provided in Table 6.

Table 6 – Mean responses on the perceived impact of direct telecom access					
	South Asia			Southeast Asia	
	Pakistan	India	Sri Lanka	Philippines	Thailand
Efficiency of daily activities	4.17	3.90	3.98	4.40	4.37
Ability to earn or save	3.80	3.97	3.19	4.07	3.56
Family and social relations	4.30	4.14	4.35	4.45	4.66
Ability to act in an emergency	4.48	4.28	4.58	4.63	4.83
1 = worsened; 2 = slightly worsened; 3 = no change; 4 = somewhat improved; 5 = improved					

¹¹ For example, as at June 2006, the prepaid ARPU for India was USD 6.34 per month (INR286) (TRAI 2006; p.24), and the prepaid ARPU for the largest mobile operator in Sri Lanka as at end 2005 was USD 4.43 (LKR 452) per month (Dialog Telekom 2006)

¹²Souter et al. (2005) provide one such example.

Across the five countries, respondents at the BOP reported that the efficiency of their daily activities has “somewhat improved” due to access to telephones. People highly value contactability at any time, as well as at any location in the case of mobile phones. Contactability through phones was seen as one of the key reasons driving people to obtain mobile connections. Some findings that emerged from the Pakistani qualitative studies (discussed in greater detail in the following section) showed that the male participants felt that mobiles have reduced the dependence of females on them in running general home errands and contacting loved ones.

When it comes to financial benefits (perceived, that is), there are mixed feelings at the BOP. The highest negative responses were seen in Sri Lanka, with a quarter of Sri Lankans at the BOP feeling that direct access has in fact worsened their ability to earn or save. There appears to be a ‘disconnect’ in people’s perceptions between efficiency gains (e.g. saving travel time and cost) and financial gains, which initially seems fairly counterintuitive. There are a number of possible reasons for this, which will not be explored in depth in this paper.¹³

However, this is not to discount the body of research which demonstrates links between access to telecom services and income improvements, or the reports of farmers and fishers checking prices before they sell their goods. In India, Pakistan and the Philippines, for example, more than 60% of those engaged in agriculture feel that access to telecom improves both the efficiency of their daily activities as well as their ability to earn or save more. This goes to show that not only the cost but also the availability of relevant information (such as agricultural prices via phone and SMS) can play an important role in allowing people at the BOP to financially benefit from access to telephones.

Phone owners by and large testify that access to a phone can enhance their family and social relations. The qualitative findings reinforced this sentiment, with many citing the importance of phones in maintaining relationships and feeling connected to loved ones and the outside world. This finding concurs with much of the existing research in the developing world (Souter et al. 2005; Vodafone 2005; Zainudeen et al. 2006) as well as the developed world (Keller 1977; Noble 1987).¹⁴

The biggest and most widespread impact of access to telephones at the BOP is in creating a sense of security, due to the ability to act in an emergency. Benefits can also be seen in disaster management, through all stages from warning to response to recovery (Samarajiva et al. 2005).

¹³ This issue is dealt with in a separate paper, presented at the Centre for Poverty Analysis Annual Symposium on Poverty Research in Sri Lanka, 6-7 December 2007, Colombo, available at http://www.lirneasia.net/wp-content/uploads/2007/04/lirneasia_teleuse_cepta_-mar07_v30.pdf. Some of the possible reasons are as follows:

- The phone is rarely used for business purposes at the BOP (seen in the current study, as well as other studies in Asia and Africa).
- A significant barter economy which exists at the BOP leads the lines between economic transactions and social communications to become blurred.
- There is a limited group within society who make direct earnings by using a phone, i.e., those who sell minutes and those who use the phone to sell their product or service; these are the people who are most likely to see a connection between the telephone and their earnings, if any.
- The high cost of service outweighs the perceived benefits, if any.

¹⁴ Cited in Wei and Lo 2006, p. 56

3.4 Uneven access? The gendered use of telephones at the BOP

Much of the existing literature suggests the existence of a 'gender divide' in terms of access to information and communication technologies (ICTs), particularly in developing countries. Further literature, based primarily on small-sample studies in affluent developed countries, suggests that there are significant differences in the ways in which men and women use ICTs. For instance, women are said to use telephones for longer-duration calls and to use them primarily for what can be broadly termed 'relationship maintenance', or keeping in touch. Men presumably make fewer calls, spend less time on the phone, and use the phone primarily for 'instrumental' purposes – essentially, to attain an objective (see for example Moyal 1992; Fischer 1992; Rakow 1992; Smoreda and Licoppe 2000).

The findings of this study show that a significant gender divide in access to telephones exists in Pakistan and India, and to a lesser extent in Sri Lanka, but is generally absent in the Philippines and Thailand. From Table 7, it is evident that women had less access to mobile phones (individually owned) than fixed phones (household owned) in the South Asian countries studied. At first glance, it appears that Pakistan exhibited the most severe divide in mobile access. However, when the ratios of male to female use are considered, it appears that Pakistan and India suffered equally large gender divides, but at different levels of penetration. There were 2.7 males for every female who used their own mobile as the most frequently used phone in both countries.

Table 7 – Access to a phone at the BOP: Primary phone used by males versus females (%)

		Pakistan	India	Sri Lanka	Philippines	Thailand
Fixed phone (household owned)	Male	11	9	19	3	4
	Female	16	10	23	4	12
Mobile phone (individually owned)	Male	30	12	22	56	76
	Female	11	5	12	55	70
Public access phones	Male	45	71	31	7	7
	Female	24	70	26	7	6
Other peoples' phones (other household members, neighbours, friends, relatives, workplace)	Male	13	8	27	34	13
	Female	48	16	39	33	12

The divide was present to a lesser degree in Sri Lanka (with a male:female ratio of 1.8:1), and hardly present at all in the Philippines and Thailand (1:1 and 1.1:1, respectively). With regard to public access phones, there was a significant gender disparity in Pakistan, with only 24% of female respondents compared to 45% of male respondents accessing this kind of phone (a ratio of 1.9:1). Access to public phones in the other four countries was equitable, with ratios of close to 1:1. Similar patterns were also seen in the higher socio-economic groups.

The Pakistani case is possibly exacerbated by specific cultural and social contexts. However, these findings seem to suggest a link between the magnitude of the gender divide and overall penetration levels in a country. This implies that as economic growth and development take place and overall penetration levels increase, the gender divide

will narrow. This is intuitive: as incomes grow, and households are able to afford more than one phone, women's access will also improve in this regard. However, the evidence of a divide of the same magnitude in the higher socio-economic groups in the same countries seems to suggest that this narrowing will not take place in the short or perhaps even medium term in the affected countries. Therefore, policy-makers should make efforts to speed up this process through policies which will enable wider telephone uptake, especially of mobiles, given the potential offered by new mobile-based applications such as mobile banking, mobile remittance services, SMS voting, etc. Further study using time-series data could shed more light on this theory.

This study challenges some of the findings of studies which claim that women's and men's use is fundamentally different. Women's use of telephones at the BOP in India, Sri Lanka, the Philippines and Thailand does not seem to differ much from men's in terms of the level of usage (number of calls and duration of calls). Pakistani women appear to make fewer calls, but for longer durations; this may have to do with the limited access to phones that was seen earlier. When it came to purposes of phone usage, Pakistani and Filipino women did use the phone for relationship purposes more than men, as claimed by the existing literature. However, Indian, Sri Lankan and Thai women did not use the phone more than men for relationship maintenance, thus challenging the literature. These findings also held true in the more affluent socio-economic groups, which implies that even among those with greater spending power and higher levels of phone usage, there are no apparent differences between men and women at different 'levels' of the economic pyramid within these emerging Asian countries. This then suggests that emerging Asian telecom users are fundamentally different from those in developed countries, not just at the BOP, but perhaps also in the remainder of the economic pyramid.

4.0 Policy implications and implementation issues

This section briefly examines the policy implications arising from the findings described in the preceding sections.

There is vast potential for telephone uptake in the region, especially South Asia. However, the biggest barrier to greater ownership seems to be affordability. While most at the BOP can afford to *use* a telephone, many cannot afford to *own* their own. The question is, how do we push out the affordability frontier and convert these non-owners into owners? How can we make a phone affordable for those on incomes of USD 2 a day in India?

The answer lies partly with policy-makers, partly with industry and partly with the market itself. The challenge for policy-makers and the industry is to facilitate the ownership of phones at such a low disposable income, hitherto not considered by conventional wisdom. Affordability barriers such as mobile-specific taxes and the relatively high cost of handsets (although prices are going down) need to be overcome if we are to find a sustainable solution to the problem. Further, steps should be taken to ensure that the design of such taxes does not hinder growth of fixed and mobile subscribers at the BOP in any significant way.¹⁵ The key is for the government to create an enabling environment for the private sector to act in.

¹⁵ LIRNEasia recently played a significant role in mitigating the worst of a proposed flat rate tax on SIM cards and further taxing mobile use in Sri Lanka. LIRNEasia research was used to illustrate why the Sri Lankan government's proposed

Operators can help to widen the set of potential income benefits of ownership, perhaps through the provision of useful 'content' through telephones, such as agricultural prices, etc. They could even promote reseller models, similar to the Grameen model,¹⁶ which can stimulate demand for minutes as well as further improve access.

Given the right conditions, the market will adapt and innovate to find its own solutions to the problems of affordability. A testament to this is the popularity of the 'missed call' or 'beeping' phenomenon, found to be used among more than one third of users at the BOP in Pakistan, India, Sri Lanka and Thailand, and about two thirds of those in the Philippines.

On the gender front, it is evident that since public/shared access is the primary form of ICT access in the five countries studied, addressing the gender divide in these markets will involve significant repercussions on the design and implementation of such public access phones and telecentres. Of particular concern is the case of Pakistan, where telecentres and other public-funded ICT access operations provide little or no benefit to women due to the prevailing social norms and conditions in the country. Such public access points need to be made more female-friendly, perhaps by having them operated by females, or having certain days or times when only women are permitted to use them.

A more sustainable solution would be to push mobile uptake in a big way. If resources are allocated toward encouraging the private sector to expand investment in infrastructure for mobile telephony, overall penetration will increase, and perhaps as the research seems to suggest, the 'divide' will narrow. This will have knock-on impacts on the uptake by women of other mobile-based services such as SMS. These services can be of great value, for example in sending and receiving remittances through electronic payment facilities on mobiles and SMS voting, and are gaining importance in today's context.

5.0 Conclusion

This study finds that almost everyone at the BOP in Pakistan, India, Sri Lanka, the Philippines and Thailand has access to telecommunication services, either through their own phone or someone else's. However, the gap between those who use telecom services and those who actually own a telecom device is extensive, indicating vast potential for marketing telephones in the region. This potential could be as high as 140 million new connections in the next two years, of which almost 100 million will be mobile connections. This means 100 million potential new users of emerging technologies based on mobile platforms, such as SMS-based remittance services, SMS voting, mobile banking, etc. Such technologies would perhaps improve the economic value that BOP owners derive from telephones. It is therefore imperative to tackle the key barrier to ownership, namely affordability, in order to facilitate these 140 million new connections and more.

In conclusion, there is great potential for expanding ownership, and thus the benefits of telecom access, at the bottom of the socio-economic pyramid. However, efforts on the part of multiple stakeholders are required. Numerous issues in policy, content and user

plan to levy a flat rate 50-rupee tax per SIM card at purchase *plus* a 7.5% mobile levy on top of the general taxes would disproportionately affect BOP mobile users.

¹⁶See Knight-John et al. (2005)

perceptions need to be overcome to improve the impacts of telephones on poverty alleviation. These issues will have to be tackled by both policy-makers and telephone operators alike using their own comparative advantages to arrive at a win-win solution for all.

References

- Arathoon, Leslie (2007). "Emerging Asia and Africa Will Be the Most Important Contributors to the Mobile Industry's Next Billion", *Pyramid Research Analyst Insight*. October.
<http://www.pyramidresearch.com/downloads.htm?id=6&sc=AI101007NXTBILLION>
- Cronin, F. J., Colleran, E. K., Parker, E. B. and M.A. Gold (1991). "Telecommunications infrastructure and economic growth: An analysis of causality", *Telecommunications Policy*. Vol 15, No 6, pp 529-535.
- Cronin, F. J., Colleran, E. K., Parker, E. B. and M.A. Gold (1993). "Telecommunications infrastructure investment and economic development", *Telecommunications Policy*. Vol 17, No 6, pp 415-430.
- Dialog Telekom (2006). *Highlights 2005*.
http://www.dialog.lk/en/corporate/ir/downloads/quarterly_reports/2005/fy_2005_investor_forum.pdf
- DigiTimes (2006). "Asia-Pacific to account for 45% of global mobile subscription growth by year-end, says research firm".
<http://www.digitimes.com/telecom/a20061017PR202.html>
- Fischer, Claude S. (1992). *America Calling: A Social History of the Telephone to 1940*. Berkeley: University of California Press.
- GSM Association (GSMA) (2006). *Universal Access*.
http://www.gsmworld.com/documents/universal_access_full_report.pdf
- Hardy, Andrew P. (1980) "The Role of the Telephone in Economic Development", *Telecommunications Policy*. Vol 4, No 4, pp 278-286.
- Kelly, Tim (2005). "Twenty years of measuring the missing link". In Milward-Oliver, G. (Ed.), *Maitland+20: Fixing the Missing Link*. Bradford on Avon: The Anima Centre.
- Kishore, J.V.S. (2003). "Paan-power", *Avant garde*, Vol 1, No 9. December.
http://www.iitk.ac.in/ime/MBA_IITK/avantgarde/Archive/paan.htm
- Knight-John, M., Zainudeen, A. and A. Khan (2005). "An Investigation of the Replicability of a Microfinance Approach to Extending Telecommunications Access to Marginal Customers". World Dialogue on Regulation for Network Economies.
<http://www.regulateonline.org/content/view/591/70/>

- Moyal, Ann (1992). "The Gendered Use of the Telephone: An Australian Case Study", *Media, Culture and Society*. No 14, pp 51-72.
- Parker, E. B, Hudson, H. E. et al. (1995). *Electronic Byways: State Policies for Rural Development through Telecommunications*, revised second edition. Washington D.C.: Aspen Institute.
- Prahalad, C.K. (2004). *The Fortune at the Bottom of the Pyramid: Eradicating Poverty Through Profit*. New Jersey: Wharton School Publishing.
- Rakow, Lana F. (1992). *Gender on the Line*. Urbana: University of Illinois Press.
- Roller, L. and Waverman, L. (2001). "Telecommunications Infrastructure and Economic Development: A Simultaneous Approach", *American Economic Review*. Vol 91, No 4, pp 909-23.
- Samarajiva, R., Knight-John, M., Anderson, P. and A. Zainudeen (2005). "National Early Warning System: Sri Lanka (NEWS:SL), a participatory concept paper for the design of an effective all-hazard public warning system". Version 2.1, 17 March 2005. <http://www.lirneasia.net/2005/03/national-early-warning-system/>
- Smoreda, Z. and Licoppe, C. (2000). "Gender-specific use of the domestic telephone", *Social Psychology Quarterly*. No 63, pp 238–252.
- Souter D., Scott, N., Garforth C., Jain R., Mascarenhas O. and K. McKemey (2005). "The Economic Impact of Telecommunications on Rural Livelihoods and Poverty Reduction: A study of rural communities in India (Gujarat), Mozambique and Tanzania". Commonwealth Telecommunications Organisation for UK Department for International Development.
- Telecom Regulatory Authority of India (TRAI) (2006). "The Indian Telecom Services Performance Indicators: April-June 2006." <http://www.trai.gov.in>
- Waverman, L., Meschi, M., and M. Fuss (2005). "The Impact of Telecoms on Economic Growth in Developing Countries", in *Africa: The Impact of Mobile Phones in the Developing World. Moving the Debate Forward*. The Vodafone Policy Paper Series, No 3, March 2005, pp.10-23, http://www.vodafone.com/assets/files/en/SIM_Project_download_2.pdf
- Wei, R. and Lo, V.H. (2006). "Staying connected while on the move: Cell phone use and social connectedness", *New Media & Society*. Vol 8, No 1, pp 52-73.
- Zainudeen, A., Samarajiva, R. and A. Abeysuriya (2006). "Telecom Use on a Shoestring: Strategic Use of Telecom Services by the Financially Constrained in South Asia". WDR Dialogue Theme 3rd Cycle Discussion Paper WDR0604, Version 2.0. <http://www.lirneasia.net/wp-content/uploads/2006/02/Zainudeen%20Samarajiva%20Abeysuriya%2006%20teleuse%20strategies.pdf>

