Non-owner teleusers at the BOP: Removing the barriers to ownership

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Abstract
This paper looks at telecom use at the bottom of the pyramid (BOP) in emerging Asia, where many of the 'next billions' of subscribers will come from. It explores the potential for new customers, and issues of affordability at the BOP. The findings reveal potential for as many as 140 new connections at the BOP in Pakistan, India, Sri Lanka, the Philippines and Thailand alone, with almost two thirds being mobile; this will have large implications for the uptake of emerging mobile applications. The policy implications of the findings are briefly examined.

Keywords
Bottom of the pyramid, Asia, telecom, non-owner user, India, Pakistan, Sri Lanka, Philippines, Thailand, next billion, access

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, adapting products and business models to better serve its needs. 'Any-amount' electronic top-ups on prepaid mobiles are one such example, akin to the 'sachet' strategy adopted by many the fast moving consumer goods industry in developing countries for example (Kishore, 2003).

The Asia Pacific 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 countries in the Asia Pacific. Given that South Asia contains the largest number of poor people, it is implicit that many of these new subscribers will come from the *bottom of the pyramid*, or the BOP, especially South Asia.

This paper reports the key findings of a five country study, Teleuse@BOP, of the use of telecom services and other information and communication technologies at the BOP in five emerging Asian countries. The paper provides a deeper understanding of the use of telecom services at the BOP among the vast majority who do not own their own phones, some who are considering ownership, some who are not. This study, anchored on C.K Prahalad's argument that there is indeed 'fortune at the bottom of the pyramid' (2004). The study revealed a combined potential for as many as 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 up-take of emerging technologies becoming available through mobile and SMS platforms such as SMS-based remittances, voting and banking, inter alia.

Section 2 of the paper briefly presents the methodology used in the study; Section 3 presents the key findings of the study, profiling the non-owner users, examining how they use the phone, and then focusing on those planning to get connected and issues related to getting connected;

Section 4 briefly examines some of the policy implications for serving the 'next billion' in these markets; Section 5 concludes.

2.0 Methodology

This paper is based on a study which was conducted in five emerging Asian countries, namely Pakistan, India, Sri Lanka, the Philippines and Thailand in mid-2006. The 'bottom of the pyramid' was defined as Socio Economic Classification (SEC) groups D and E, where the SEC is a commonly used classification 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 non-representative 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 (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 use 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 centers. After determining the number of centers to be selected from each cell (strata in respective provinces/states), urban and rural areas were selected again using PPS on a constant population interval on geographically ordered centers within each cell.[2] In each selected centre, a common place such as a road, park, hospital etc. was designated the starting point for contacting households.[3] 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.[4] An overview of the sample size and composition is given in Table 1.

TABLE 1: QUANTITATIVE SAMPLE OVERVIEW

Country	Population (millions)	Sample Size			Error margin at 95 percent CI
		SEC A, B, C	SEC D, E	Total	
Pakistan	166	731	1,081	1,812	3.0%
India	1,000	652	3,348	4,000	1.5%
Sri Lanka	16 (excluding North & East provinces)	596	481	1,077	3.0%
Philippines	87	92	1,008	1,100	3.0%

Thailand	65	348	352	700	7.0%
Total sample size:				**8,689**	

The qualitative module consisted of six Extended Focus Group Discussions (EGDs)[5] in each country to enrich the findings of the quantitative survey. Each had average of eight respondents, including telecom users *as well as* non-users.[6] All groups were conducted in the local language(s).

3.0 Key findings

Of the 6,269 BOP telephone users (aged 18-60) sampled across Pakistan, India, Sri Lanka, the Philippines and Thailand, 70.6 percent did not own their own phone at the time of study, in mid-2006; this represents a total of 280 million 18-60 year olds at the BOP across the five countries, as Figure 1 illustrates.

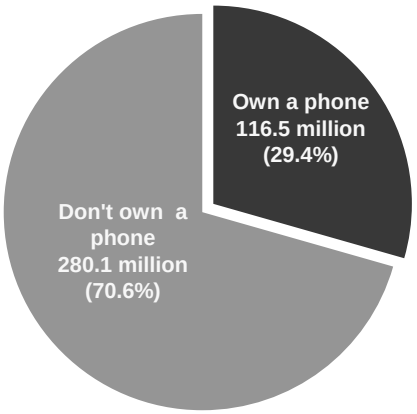

FIGURE 1: TOTAL NUMBER OF OWNERS AND NON-OWNERS BETWEEN THE AGES OF 18 AND 60 AT THE BOP IN SAMPLED COUNTRIES.

3.1 Non-owner users: who are they?

The Asia Pacific 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 claimed that 45 percent of the global growth by the end of 2006 would come from the Asia Pacific; of this, 25 percent was predicted to come from India, Pakistan, Philippines and Thailand - four of the five countries considered in this study (DigiTimes, 2006). Similarly a recent research report by Pyramid Research estimated 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 percent will come from Emerging Asian countries, India contributing the largest share, with 294 million new connections (Arathoon, 2007).

The current study revealed that access to a phone is very high in the countries studied; of all those contacted through the random selection process, more than 90 percent in all countries

had used a phone at least once during the preceding three months. That is, made or received a call, from any phone in the last three months; this was the criteria for participating in the study. However, as Figure 1 showed, 70.6 percent of these BOP users did not own their own phones; such non-owner users are usually not considered in conventional analyses – based on industry data collected from current subscribers. India had the highest percentage at the BOP that did not own their phones, while Thailand had the lowest (Table 2). For much of the analysis in this paper, Thailand is not considered as the bases were insufficient for disaggregated analysis.

TABLE 2: PERCENTAGE OF NON-OWNER USERS AT THE BOP

Pakistan	India	Sri Lanka	Philippines	Thailand
63.6%	80.7%	59.0%	38.0%	18.0%

As one would expect, the levels of non-ownership were higher in the BOP (SEC groups D and E) than at the 'middle and top' of the pyramid (SEC groups A, B and C), with non-ownership almost twice as high in the former, probably as a result of lower levels of income. Within the BOP, non-owner users earned less on average than owners, both in terms of personal and household income, a fairly intuitive finding. The average monthly household income of non-owner users at the BOP ranged from approximately USD 30 in Thailand, to USD 117 in the Philippines, while average monthly personal incomes range from USD 8 in Thailand to USD 37 in the Philippines (Table 3).

TABLE 3: AVERAGE MONTHLY HOUSEHOLD AND PERSONAL INCOMES AT THE BOP

	Pakistan (USD)	India (USD)	Sri Lanka (USD)	Philippines (USD)	Thailand (USD)
Average monthly household income					
Non-owners	79	50	73	117	30
Owners	132	84	113	180	50
Average monthly personal income					
Non-owners	24	18	31	37	8
Owners	43	31	53	53	15

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Overall, a majority of the phone users at the BOP comprised of farm/agricultural workers or trained or untrained laborers or, although, in the Philippines, a large share appeared to be housewives (Table 4). The differences between non-owners versus owners reflected those seen with regards to income above. Larger shares of non-owner users came from these less-skilled occupations in all five countries, or with the exception of the Philippines were unemployed. A greater share of phone owners were self-employed, traders, industrial workers or involved in professional, service-oriented or administrative jobs.

TABLE 4: OCCUPATIONAL CATEGORY OF NON-OWNER USERS

	Pakistan (%)	India (%)	Sri Lanka (%)	Philippines (%)	Thailand (%)
Farming / Agriculture	22.50	17.10	21.40	15.28	42.30

Laborer	51.30	37.00	27.10	5.70	26.30
Trade	0.40	4.60	4.70	0.23	2.10
Industrial	2.40	0.60	1.90	2.80	5.30
Services, professional, administrative	5.40	2.20	1.20	13.40	2.90
Self-employed	10.4	1.90	3.10	10.70	1.20
Student	0.20	0.70	-	4.33	3.36
Housewife	-	2.80	2.62	33.48	7.26
Unemployed	-	29.60	7.84	13.22	7.80
Other	7.20	3.50	30.20	0.86	1.58

Levels of non-ownership are, as one would expect, higher in rural areas in all five countries, confirming the existence of an urban-rural digital divide (Figure 2). This is likely to be a factor of varying income levels between urban and rural locations, as well as varying levels of infrastructure availability. This difference is least significant in the Philippines where the difference between urban and rural non-owners was a mere two per cent.

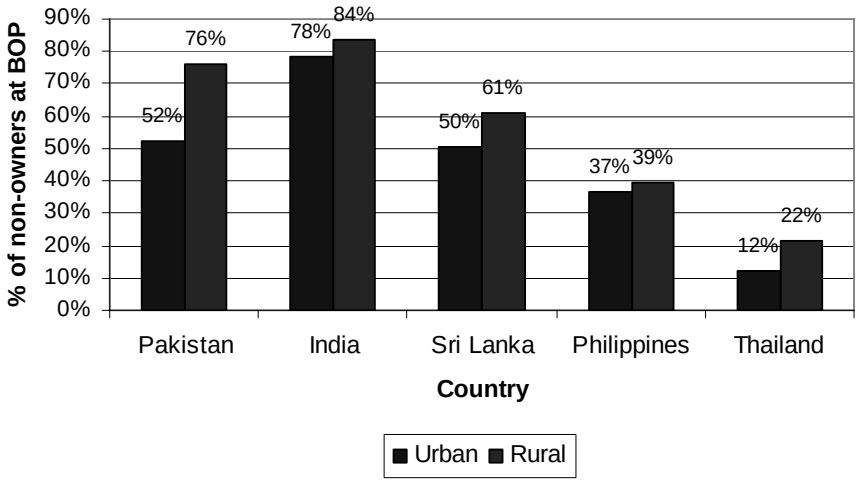

FIGURE 2: RURAL VERSUS URBAN NON-OWNER USERS AT THE BOP

Those who did not own their own phones tended to be slightly older on average than those who did own a phone (Figure 3); however, when fixed-phone and mobile-phone owners were considered separately, it was evident that non-owner users were on average older than mobile owners, but younger than fixed-phone owners. The mean age of non-owners ranged from 32 in Pakistan to 38 in Sri Lanka.

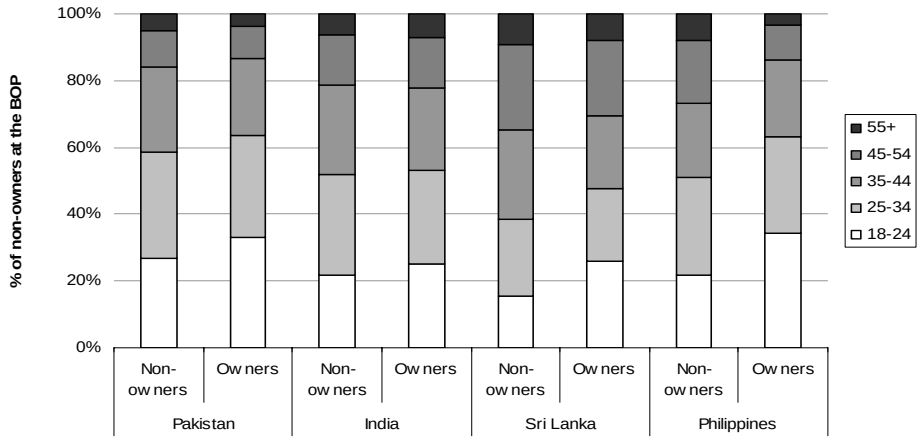

FIGURE 3: AGE OF BOP PHONE OWNERS VERSUS NON-OWNERS

There appear to be almost as many male as female non-owner users at the BOP, as Figure 4 demonstrates; unlike the case of phone owners, where there were more male than female phone owners.

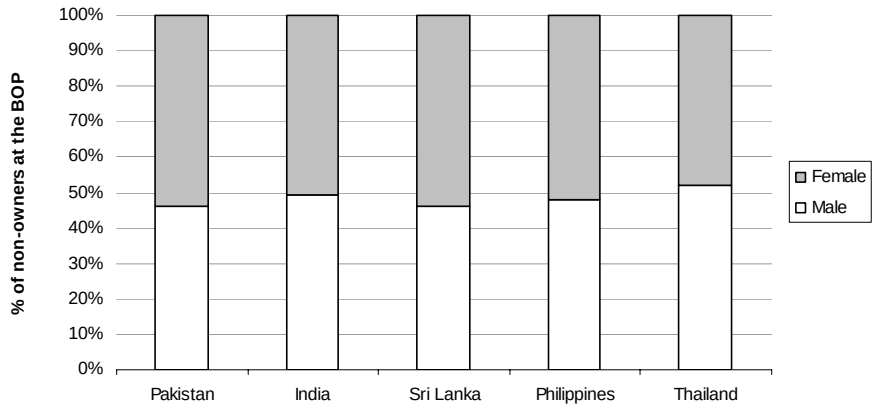

FIGURE 4: GENDER OF BOP PHONE OWNERS VERSUS NON-OWNERS

3.2 Non-owner users: what do they use?

The previous subsection showed that the non-owning group of BOP teleusers are a more financially constrained group, in lower-paying occupations and with resultantly low incomes, many of whom live in rural areas. Among the South Asian non-owner users at the BOP, the greatest reliance was on public phones – including public call offices (PCOs), public payphones, telecenters, etc. This was particularly the case in India, with almost 86 percent of non-owners using public phones as their primary access mode. Although they did state that they also used other peoples' phones (friends', relatives' or neighbors'). In the Philippines as well as Thailand, such communal use of private phones was more prevalent (Figure 5). While phone owners relied primarily on the phone that they owned, they stated that they did use other access modes, mostly public phones in the South Asian countries, and used other people's phones in the Southeast Asian countries.

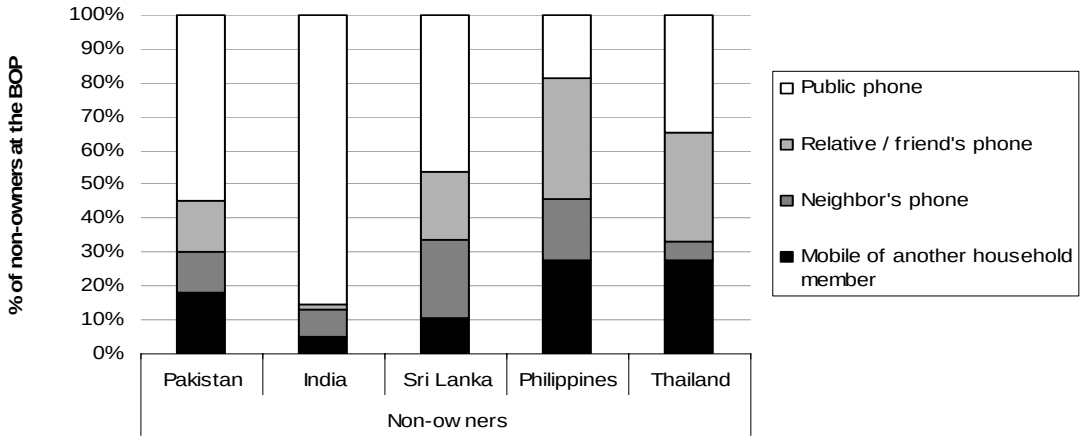

FIGURE 5: PRIMARY ACCESS MODES USED BY NON-OWNER USERS AT THE BOP

Surprisingly, at the BOP in the five countries, the majority can get to a phone in less than 10 minutes (Figure 6). Based on these findings, it could be inferred that universal access has almost been achieved in these countries. A small percentage of non-owners in rural India (13%) and rural Pakistan (17%) indicated that they had to incur additional transport costs to access a phone; in rural India, this cost was typically less than 40 US cents, while in rural Pakistan, this amount exceeded 40 US cents for more than half the non-owners.

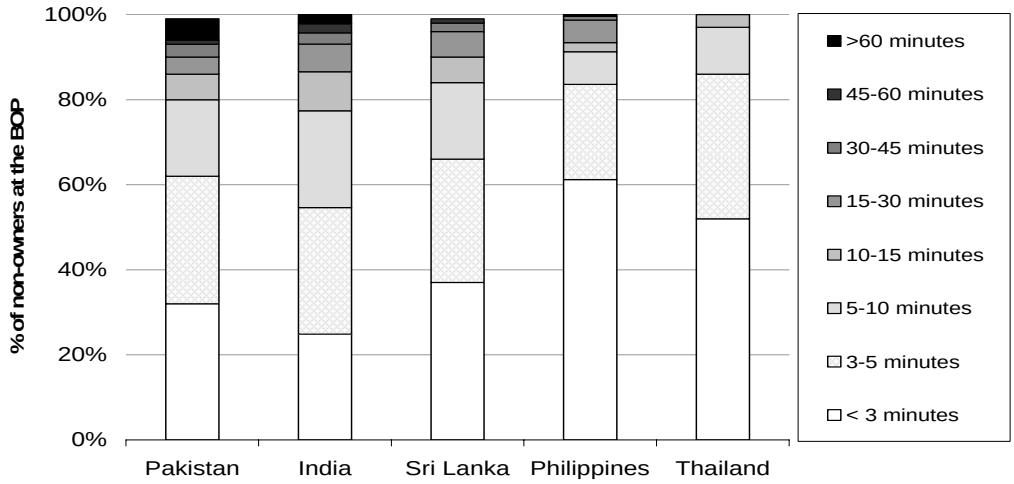

FIGURE 6: THE TIME TAKEN TO REACH THE NEAREST PHONE BY NON-OWNERS

Non-owner users made and received fewer calls than owner users, making and receiving a monthly total of approximately 19 calls in Pakistan, 36 in India, 12 in Sri Lanka, 11 in the Philippines and 38 in Thailand (Figure 7). The ratio of incoming to outgoing calls was closer to 1 among non-owners in all five countries, while that for owners was higher – that is owners received a greater *share* of calls than non-owners. This is understandable because the main

advantages of ownership are easy accessibility through the unique number associated with the owner.

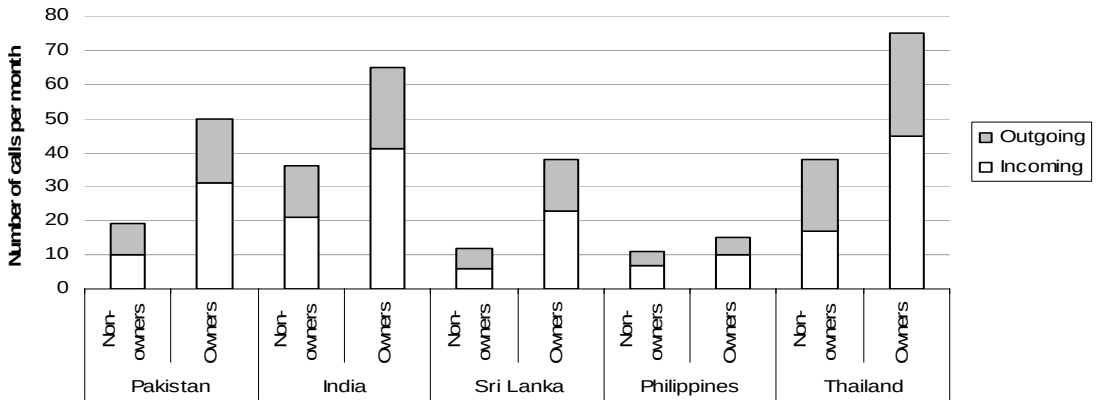

FIGURE 7: TOTAL NUMBER OF CALLS MADE AND RECEIVED PER MONTH ON AVERAGE: NON-OWNERS VS. OWNERS

In terms of call destination/type among owners and non-owners, the largest share was local calls. Among non-owners, in all cases, over 55 per cent of calls made and received were local calls; approximately 30 per cent of calls were national calls while international calls were less frequent across the five countries. Small percentages of international calls were seen in the Philippines and Sri Lanka, but lower than was seen among owners in both countries. These two countries have, proportionately the largest populations of migrant workers among the five countries in the survey. Iredale et al (2005) state that the Philippines is the largest exporter of labor with over 7 million migrant workers in over 190 countries, while Sri Lanka's migrant workers account for approximately 10% of the overall national workforce. This explains the fact that Philippines and Sri Lanka generate/receive more international calls at the BOP compared to the other countries in the survey.

On average, non-owner users at the BOP generally spent between 2 to 3 minutes on their phone calls. Non-owning Pakistanis were seen to make longer duration calls when compared to the other South Asian samples and South East Asian samples in the study.[7]

Almost two thirds of all calls made by non-owners in the five countries studied were for the purpose of relationship maintenance, or 'keeping in touch.' The qualitative research reinforced this finding, with many citing the importance of phones in maintaining relationship and feeling connected to loved ones and the outside world. Similarly high use of phones for social purposes has been seen in other studies in developing countries (Souter et al, 2005; Vodafone, 2005; Zainudeen, Samarajiva and Abeysuriya, 2006 as well as the developed countries (Keller, 1977; Noble, 1987[8]). Instrumental calls made up only about a third of all calls. It may be true that rural farmers use their mobiles to check on the best prices for their product, but they do not use the phones solely for such purposes. Furthermore, it is possible that even social calls serve instrumental purposes, because of the significance of the barter economy at this level of society. Souter et el (2005) also find that different communication methods and different information sources are valued for meeting different needs. Face-to-face communication was preferred for

obtaining information relating to farming, business interactions in a study of phone users in Tanzania, Mozambique and Gujarat (India).

3.3 Potential subscribers at the BOP: the next billion?

Among the BOP non-owner users, 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 could be as many as 140 million people at the BOP in the five countries covered by this study likely to become new telephone owners by mid-2008. This estimate is not inconsistent with the estimates of GSM Association and others who believe a large component of new growth to occur in these five countries. Although these prospective customers may be already contributing to the revenues of operators (through the use of other peoples' phones); it is estimated, for example in Sri Lanka, that the number of calls made will almost double if a mobile is obtained, and more than double if a fixed phone is obtained. However, several issues pertaining to making phone instruments affordable at the BOP will have to be addressed to capture this potential. As seen in Table 5, the expected volume in South Asia will be far greater than that of Southeast Asia, as a larger proportion in the latter region are already connected. If the conditions at the time of study continued, the BOP household penetration alone in these countries could rise to as high as 70 % in Pakistan and Sri Lanka, close to 80 % in the Philippines and Thailand, and around 50% in India.

TABLE 5: PROJECTED OWNERSHIP GROWTH AT THE BOP

	South Asia			**South-east 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**
Projected BOP penetration	70%	50%	72%	78%	86%

Most of these new customers will have monthly household incomes of less than USD5 per day, although a considerable number in India will come from households that earn less than USD2 per day. With the exception of Sri Lanka, the majority planned to invest in mobile connections as seen in Table 6, which could amount to almost 100 million the new connections. Given that more than 90 percent of current mobile owners at the BOP in the five countries are prepaid subscribers, it is likely that a large proportion of these new mobile connections will also be prepaid.

TABLE 6: TYPE OF PHONE PROSPECTIVE OWNERS AT THE BOP WOULD BUY

	South Asia			South-east Asia[9]
	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 assist such non-owner users who are aspiring to become owners to obtain their own phones? 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 percent 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,[10] the majority cannot afford to *own* one; they have to be content with using someone else's. Surprisingly, affordability is also an issue for non-owners within the 'top and middle' of the pyramid (SEC groups A, B and C) too.

Of the 280 million non-owner users, 42 didn't plan to get connected; more than 50 percent of these are women (ranging from 52 percent in India to 64 in Pakistan), a large majority come from rural areas, are poorer and also are younger.

In terms of getting connected, there appears to be a significant gap between the expected cost, and what the BOP can afford. While non-owners at the BOP expected a telephone to cost a certain amount, their affordability does not necessarily reflect the ability to purchase a unit at the expected price point as seen in Table 7. This is true in the case of all four countries examined in the Table.

TABLE 7: INITIAL COST OF OBTAINING A PHONE: EXPECTATIONS VS. AFFORDABILITY

	South Asia			Southeast Asia[11]
	Pakistan	India	Sri Lanka	Philippines
Amount that prospective owner expects a new phone connection to cost				
Below USD25	79 %	78 %	10 %	10 %
USD26-55	18 %	18 %	21 %	39 %
USD56-85	2 %	3 %	29 %	28 %
USD86-115	1 %	0 %	22 %	18 %
Over USD116	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, seen in Figure 8. The average price paid for such recycled phones is in some cases half that of brand-new ones; the gap between the price paid for second-hand versus brand new handsets increases from the South to Southeast Asian BOPs. Even though the study did not consider the smuggled phone phenomena (where import duties and sometimes even government taxes are avoided) the industry believes a significant component of particularly mobile instruments are brought into countries through such illegal means; thus making them cheaper than official selling prices.

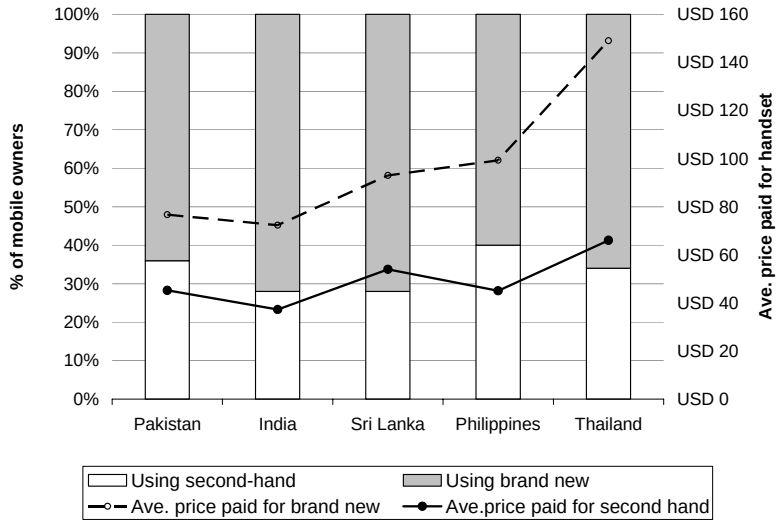

FIGURE 8: USE OF BRAND-NEW AND SECOND-HAND HANDSETS AND PRICES PAID

When it comes to the cost of 'staying' connected, i.e., average monthly expenditures, expectations and affordability were better aligned. Around 90 percent of non-owners in India and Pakistan expect monthly expenditure on telecom usage to be less than USD 5; around 30 percent in Sri Lanka and 40 percent in Philippines expect their monthly expenditure to be between USD 5-10. 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 monthly ARPU [average revenue per user] numbers on prepaid (which form the majority of mobile connections), of around USD 5.[12]

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 is affordability; while most at the BOP can afford to *use* a telephone, many cannot afford to *own* the instrument. The question is how do we push out the

affordability frontier and help these non-owner users become owner users? How can we make a phone affordable for those on incomes of USD 2 a day in India?

The answer lies in part with policy makers, in part with industry and in part 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 part of the addressable market. 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.[13] Policy makers can consider innovative approaches to allow service providers to provide mobile-banking services for example, and also permit allow bundling of services, even those not related to telecom services such as money transfers etc. Policy makers should also reduce distortionary universal service obligations and access deficit charges that actually increase prices to the consumer. The key is the creation of an enabling environment by the government, for the private sector to act in. Well-designed policies which promote the expansion of infrastructure by the private sector can facilitate the provision of affordable services to the hitherto un- and underserved of emerging Asia. Given the distinct preference for mobile connections seen in this research, such policies will ultimately have knock-on impacts on the uptake of other mobile-based services such as SMS at the BOP. Among BOP owners, 100 percent in the Philippines were already using SMS. The corresponding numbers in Pakistan, India, Sri Lanka and Thailand were 50 percent, 35 percent, 60 percent and 30 percent. Such services which can be of great value, for example in sending and receiving remittances through electronic payment facilities on mobiles, SMS-voting etc., and are gaining importance in today's context.

Service providers 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 and money transfer facilities, in local languages . The growing popularity of SMS-based services in Asian countries is an encouraging factor. Service providers may even promote reseller models with the support of micro-finance companies in the interim, similar to the Grameen model,[14] which can also stimulate demand for minutes as well as further improve access; such models will decline in importance as individual access grows. Other ways in which service providers can help to bring down the affordability barrier include the provision of finance schemes.

Given the right conditions, the market will adapt and innovate to find its own solutions to the problems of affordability—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) is testament to this. Civil society may be able to play a role in creating awareness of the benefits of telecom and ICT access and ownership (seen to be low in the current study, de Silva and Zainudeen, 2007) at the BOP, especially in small and medium-sized enterprises.

5.0 Conclusion

This study finds that almost everyone at the Bottom of the Pyramid in Pakistan, India, Sri Lanka, Philippines and Thailand have access to telecommunication services, either through their own

phones or someone else's. However, the gap between non-owners who use telecom services and those who actually own a telecom device is extensive indicating a vast potential for marketing telephones in the region. According to the survey, this potential could be as high as 140 million new connections by mid-2008. Almost 100 million of these will be mobile connections. What this means is potentially 100 million new users of emerging technologies based on mobile platforms, such as SMS-based remittance services, SMS-voting, mobile banking, etc., which are gaining importance, as well as popularity in low-income settings of emerging Asia.

It is therefore imperative that affordability, seen to be the key barrier to ownership, be tackled to facilitate these 140 million new connections and more; however, efforts on the part of multiple stakeholders are required. Multiple issues in policy, content and user perceptions need to be overcome to allow the benefits of telecom ownership to be availed of by current non-owners. These issues will have to be tackled by both policy makers and telephone service providers alike using their own comparative advantages to arrive at a win-win solution for all.

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End notes:

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

[3] 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.

[4] 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.

[5] EGDs are longer than an average focus group – 3 hours or so as opposed to one and a half to two hours. The advantage is that respondents are not rushed.

[6] Someone who has not used any form of telecommunication during preceding 3 months.

[7] The Pakistani numbers are probably driven up by the longer duration calls that women made in the country, possibly a result of constrained opportunities to use the phone (Zainudeen and Iqbal, 2007).

[8] Cited in Wei and Lo, 2006; p.56

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

[10]The BOP (owners plus non-owners) rate the cost of *using* telecom services (on a five-point scale) as 'somewhat affordable' to 'affordable.'

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

[12] For example, as at June 2006, the prepaid ARPU for India was USD6.34 per month (INR286) (TRAI, 2006; p.24); that for the largest mobile operator in Sri Lanka as at end 2005 was USD4.43 (LKR452) per month (Dialog Telekom, 2006)

[13] LIRNE*asia* 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. LIRNE*asia* research was used to illustrate why the Sri Lankan government's proposal to levy a flat rate of 50 rupee tax per SIM card per month *plus* a 7.5 percent mobile levy on top of the general taxes amounting to around 16.5 percent would disproportionately affect bottom of the pyramid (BOP) mobile users.

[14] See Knight-John, Zainudeen & Khan (2005)