

**Teleuse on a Shoestring:  
Poverty reduction through telecom access at the 'Bottom of the  
Pyramid'**

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## 1.0 Introduction

Much has been said of the benefits of access to telecommunication especially at the 'Bottom of the Pyramid'.<sup>2</sup> The economic as well as social benefits from such access can, in theory enable people to graduate from poverty and also contribute more widely to development. Thus it can be argued that inequality in access to telecom services can lead to limitations in fighting poverty.

Many in the 'ICT for development' movement highlight the benefits that telecommunication, the Internet and other information and communication technologies (broadly put, ICTs) can bring to the table in the fight against poverty. A number of studies have attempted to demonstrate the impacts of access on income at the macro-level. However supporting evidence for these arguments at the household level is limited at best.

This paper takes a unique look at telecom access and studies the perceived impacts of direct access to telecom services, that is, telephone ownership at a household level at the 'Bottom of the Pyramid' in five developing Asian countries. It focuses on the perceived economic impact (positive or negative) of telecom ownership in terms of the potential to increase indirect income generation capacity or save on expenditure or transactions costs. The findings reveal that some telecom users do perceive the economic benefits of direct access to be high, but this finding is not seen across the board for a number of reasons explained.

The paper is based on a large sample survey of telecom users at the BOP in Pakistan, India, Sri Lanka, the Philippines and Thailand. Section 2 reviews the existing literature on the impacts of telecommunication. Section 3 explains the study design and methodology, and examines the difficulties faced in conducting a study of this nature and the methodological innovations undertaken. Section 4 explores in detail the impacts of telecom services at the BOP in the five countries. Section 5 concludes, looking at the policy implications from the study.

## 2.0 Literature Review

This literature review, by no means comprehensive, is to establish context to the current study by considering the existing literature on the impact of access to telecoms on the income earning potential particularly at the lower strata of society. The objective here is to understand to what extent greater access, argued also as more equitable access, can help fight poverty. We note that while telecom is only one component of the broader set of information and communication technologies (ICT) and that the access to the Internet is also considered by many in dealing with the above issues, our focus is only on telecom.<sup>3</sup>

Many studies over time have concluded that access to telecom has a fairly strong impact on growth and economic development, and therefore poverty reduction. Research into the impacts of telecommunication services at the macro-level is fairly rich. Hardy (1980), Cronin et al (1991), Parker and Hudson's (1995), Cronin et al.'s (1993), and more recently Roeller and Waverman (2001) as well as Waverman, Meschi and Fuss (2005) are just a few who have demonstrated the positive impacts of telecommunication on economic growth and development. Recently, some studies have focused on the relationship between access to

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<sup>2</sup> All due credit to C.K Prahalad (2004)

<sup>3</sup> This study finds that access to the Internet at the BOP is less than 2 percent in the South Asian countries and 10 percent or less in the Southeast Asian countries.

telecoms and economic well-being of the poorer segments of society in several countries at a micro-level, as does this study.

Souter et al. (2005) assess the impact of telephones on the livelihoods of low-income rural communities in Mozambique, Tanzania and Gujarat (India). Impacts on financial capital are mixed, with most of it coming from saving travel time and cost or postage cost, but little impact on income generation. Only the better-off (in terms of wealth and education) see greater benefits in income generation. Impacts on social capital through networking, especially within the family are large.

The 'social' use of phones has also been seen in several other studies. Zainudeen, Samarajiva and Abeysuriya (2005), in a study conducted among financially constrained users in several localities in India and Sri Lanka found that the large majority of phone use was for 'keeping in touch' with family and friends rather than instrumental uses such as business and financial transactions. Bayes et al. (1999) also cite 'social cohesion' availed of by telecom users, especially in the case of Bangladesh where many families have members working abroad. Such 'social' use is not to be considered 'frivolous'; as the mere ability of families to stay in touch contributes to better quality of life.

Bangladesh is a widely cited example, where telecommunication is alleged to be particularly important in contributing to incomes of many poor families who depend on remittances from members working abroad. Richardson et al. (2000) found that the discussion of financial matters is a very important use of the phone among the rural poor, thus enabling financial transactions. In addition, phones are used as direct income generating devices in rural Bangladeshi villages through the 'resale of minutes'. This however is done with the support of micro-loans to make the initial purchase of the phone and subsidized call rates. Richardson et al. (2000) as well as Bayes et al. (1999) demonstrated the income benefits arising from this kind of business to be considerably large. However, these two phenomena are not commonly seen in other settings. Bayes et al (1999) also note the non-economic benefits of phone access in rural Bangladeshi villages, such as improved law enforcement, disaster-communication, and increased social kinship.

In theory, lowered transaction costs, inter alia through faster access to more accurate information should help the poor to directly increase their incomes, or indirectly through the more productive use of the time saved by placing a call. The significant fact is that empirical evidence of such income impacts at a generalized level is sparse. Donner (2005), one of the few studies that attempted to aggregate this impact considered the call behaviour of 277 Rwandan micro-entrepreneurs, based on the call logs on their mobile phones and found that a large proportion of their calls were with non-business contacts, regarding non-business issues. However, Donner notes that just the mere contactability and resulting flexibility associated with having a mobile might still have impacts on productivity and therefore income.

On the whole, there appears to be a dearth of empirical evidence of the economic benefits of access to telecom in developing countries, as well as developed countries, at least available in the English language. Aside from empirical studies on the Grameen Village Phone program in Bangladesh (which generally assesses the income impacts of selling telecom services in rural areas, a kind of income benefit which is not the focus of the current study), it is difficult to find substantial empirical evidence of benefits of telecom access on income; much of the evidence of income impacts at the BOP is anecdotal. For instance, NOKIA (2006, p.4) reports of fishermen in Porto da Manga, Brazil availing of '100-150 per cent' increases in revenues through improved catches and reduced storage losses enabled by communication with other fishermen as well as wholesalers through mobile phones. A similar phenomenon is seen among fishermen in Moree, Ghana, where mobiles are reportedly improving living standards, by allowing fishermen to cut out the 'middle man' (or women in this case) and increase their earnings (mobileafrica.net, December 2005)<sup>4</sup>. A study by de Silva (2005) on a project at Sri Lanka's largest wholesale agricultural market, where produce prices were available through an automated voice system accessible through mobile phones found that most farmers

<sup>4</sup> mobileafrica.com (December 2005) *Mobile Phone: A Tool For Modern Fishermen In Ghana*, by Mawutodzi K. Abissath

believed that they were able to get accurate prices through the system over the phone empowering them to bargain for higher prices.<sup>5</sup> Kantipuronline.com (October 2006) reports of farmers in rural Nepal being saved 3 hour journeys by foot to the nearest phone, allowing them to spend more time seeing to daily far activities,<sup>6</sup> i4d Magazine reports of agricultural and veterinary advice being made available through the phone in local languages to farmers in villages in Northern India (i4d, September 2006).<sup>7</sup>

Empirical evidence at this micro-level is sparse; this paper attempts to contribute to the empirical literature at such a level, by examining the perceived benefits of direct access to telecom at the BOP.

### 3.0 Research Methodology

#### 3.1 Research Considerations: Defining the *Bottom of the Pyramid* for country-wise comparisons

The study was conducted in five emerging Asian countries, namely Pakistan, India, Sri Lanka, Philippines and Thailand. Given the necessity for cross-country comparisons among the less privileged strata of society, the target groups had to be defined as close as possible in a universal manner. While income levels appeared to be relevant, the practicality of using it as an indicator was limited by its reliability and comparability across countries; the problems generated by spatial and temporal cost of living adjustments would have made comparisons difficult. In addition, past studies have revealed that Asians tend to overstate or understate their income. Given the study was to be among the lower income groups, the tendency would have been to overstate their income. Thus this parameter while indicative would not have been conclusive or reflective of the respondents' status. In this background, Socio Economic Classification (SEC) was used instead of Income to define the BOP.

SEC categorizes people in to groups A to E based on the education and occupational status of the Chief Wage Earner of the household. For the purposes of this study, the 'top' and 'middle' of the pyramid was defined as SEC A, B & C, while the BOP was defined as SEC D and E. Focus was on the lower end (SEC DE) while a small upper and middle sample (SEC ABC) sample was covered for comparison purposes.

#### 3.2 Target Group

Target respondents of the study were telecom users, defined as those who had used a phone (own or someone else's; paid for or free-of-charge) during the preceding 3 months. Respondents were males and females between the ages of 18 and 60, from rural and urban locations.

#### 3.3 Research Design

Both quantitative and qualitative research modules were undertaken. The quantitative module consisted of face to face interviews conducted with the target respondent using a structured questionnaire. Interviews were conducted at home. Both households and respondents were randomly selected. 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.

Having designed the sample the next big issue was the accuracy of usage data. One of the main reasons for lack of evidence of the relationship between telephone access and economic wellbeing at the household level in developing countries could be the difficulty in accurately capturing calling patterns and behaviour at the BOP.<sup>8</sup> While much telecom use

<sup>5</sup> <http://www.globalfoodchainpartnerships.org/cairo/presentations/HarshadeSilva.pdf>

<sup>6</sup> Kantipuronline.com (October 2006) *Hills are alive with the sound of cell phones*, By Lilaballav Ghimire, 30 October 2006. Retrieved on 6 November 2006, from <http://www.kantipuronline.com/kolnews.php?&nid=89958>

<sup>7</sup> i4d (September 2006) *Soochna Se Samadhan Sewa*, Phone-based agri info service for farmers. 28 September 2006, New Delhi, India. Retrieved on 06 November 2006 from <http://www.i4donline.net/articles/current-article.asp?articleid=840&typ=Rendezvous>

<sup>8</sup> Previous studies (Zainudeen et al., 2005) have cited the difficulties in recall data. See also Cohen and Lemish (2003) for discussion.

research in the developed world is based on billing records, in developing countries where the majority share phones and use pre-paid mobiles, it is not possible to obtain bill details, and thus alternative methods have to be relied on, such as the respondent's recall, mobile call logs or other more sophisticated and costly real-time measures.

As a result, the current study takes an innovative approach, recording phone use and behaviour through the placement of a diary among respondents.<sup>9</sup> Diaries were placed among 50 percent of randomly selected respondents for a period of two weeks.<sup>10</sup> Number of calls made or received; whose phone or where the phone was used; who the call was to or from; purpose of the call; time of the call; whether voice or Short Message Service (SMS) etc. were recorded. An incentive was provided for diary completion while random checks were conducted to ensure that recordings were being made. Across the five countries about 90 percent of diary panellists completed calling information, but responses on SMS (text message) details was low.

A multi-stage stratified cluster sampling by probability proportionate to size (PPS) 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.<sup>11</sup> In each selected centre, a common place such as a road, park, hospital etc. was designated the starting point for contacting households.<sup>12</sup> Only one respondent was selected from each household. In households with more than one valid respondent, the KISH grid (random number chart) was used to randomly select the respondent. Within each country, data was weighted by gender, province group /zone and SEC group (ABC vs. DE) to correct over or under-sampling in certain areas and socio economic groups.<sup>13</sup> 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 percent CI
		Urban	Rural	Total	
Pakistan	166m	900	912	1812	2.7%
India	1,000m	1645	2355	4000	1.5%
Sri Lanka	16m (excl. N&E provinces)	200	850	1050	3.0%
Philippines	87m	594	506	1100	3.0%
Thailand	65m	350	350	700	7.0%
<b>Total sample size :</b>				<b>8662</b>	

The qualitative module consisted of Extended Focus Group Discussions (EGDs) to enrich the findings of the quantitative survey. Six EGDs were conducted in each country, each consisting on average eight respondents. Table 2 provides the sample overview. Respondents included telecom users as well as non-users.<sup>14</sup> All groups were conducted in the local language(s).<sup>15</sup>

**Table 2: Sample country composition for Qualitative component**

Country	SEC DE only		Centres
	Users	Non-users	

<sup>9</sup> One of the very few examples of use of this approach is a British Telecom study examined in Mckenzie (1983). Interestingly, the authors were not able to locate any comprehensive studies using this approach in the literature for developing countries.

<sup>10</sup> Given the low literacy level of some of these countries, a literate person in the household was selected and trained to record the necessary information.

<sup>11</sup> 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.

<sup>12</sup> 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.

<sup>13</sup> As a result of weighting by SEC it should be noted that in reporting the results, in some countries the SEC ABC weighted sample size becomes larger than the SEC DE weighted sample size where the former group forms a higher proportion of the country's population.

<sup>14</sup> Someone who has not used any form of telecommunication during preceding 3 months.

<sup>15</sup> 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 an EGD.

	Males	Females	Males	Females	
<b>Pakistan</b>	2	2	1	1	Peshawar, Karachi, Lahore
<b>India</b>	2	2	1	1	Lucknow, Teravature
<b>Sri Lanka</b>	2	2	1	1	Kurunegala, Moneragala
<b>Philippines</b>	2	2	1	1	Metro Manila, Batangas
<b>Thailand</b>	2	2	1	1	Chiang Mai
<b>Total sample size :</b>	30 EGDs				

## 4.0 Findings

This section provides the context for the rest of the paper, considering usage and ownership issues at the BOP. After providing a backdrop to anchor the findings on, it goes on to look at impacts of access and usage of telecom services.

### 4.1 Equality in access, but not ownership

The Asia pacific is one of the world's fastest growing telecom markets, with its mobile subscription base growing by 160 million in the first nine months of 2006, with China, India and Pakistan accounting for 70 percent of this growth<sup>16</sup>. However, as seen in Table 3, number of telephones per 100 population<sup>17</sup> in each country suggest significant access inequalities with the number of fixed phones per 100 population ranging from 4 to 10 and the number of mobile phones per 100 population ranging from 13 to 48.

**Table 3: Telephones per 100 population**

	South Asia			Southeast Asia	
	Pakistan	India	Sri Lanka	Philippines	Thailand
Fixed (as at...)	4.16 (2006 Q4)	4.58 (2006 Q1)	9.50 (2006 Q4)	4.07 (2005 Q4)	10.25 (2005 Q4)
Mobile (as at...)	25.22 (2006 Q4)	8.82 (2006 Q1)	27.1 (2006 Q4)	41.30 (2005 Q4)	46.45 (2005 Q4)
Total	29.38	12.80	29.10	45.30	47.7
Source	PTA	TRAI	TRC	NTC	NTC
*lines in use (different from installed capacity)					

As such, much of the research and advocacy in the 'ICT for development' arena focuses on how countries can achieve 'universal access' to telephones, that is, a situation where everyone has a 'reasonable means of access to a publicly available telephone'<sup>18</sup> (Intven, 2000; Appendix C, p.15), and how the 'digital divide', that is the gap between the ICT 'haves' and 'have nots,' can be closed.

One of the most significant findings of this study is that accessibility in all five countries, is extremely high; that is 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,<sup>19</sup> as seen in Figure 1. If this is the case for the whole country, then accessibility at the BOP can not be much lower. This finding therefore brings under scrutiny the real dimensions of the digital divide, that is said to exist; if almost 90 percent have access, then perhaps the 'have nots' in fact have *some* kind of reasonable access, but not necessarily ownership.

<sup>16</sup> <http://www.digitimes.com/telecom/a20061017PR202.html> , accessed on 17 October 2006.

<sup>17</sup> Also known as 'teledensity,' a telecom indicator which measures the level of telephone penetration in a country

<sup>18</sup> This is to be seen in contrast with the concept of 'universal service' whereby every individual household has a connection to a public telephone network (Intven, 2000; Appendix C, p.15)

<sup>19</sup> That is, made or received a call, from any phone in the last three months; this was the criteria for participating in the study.

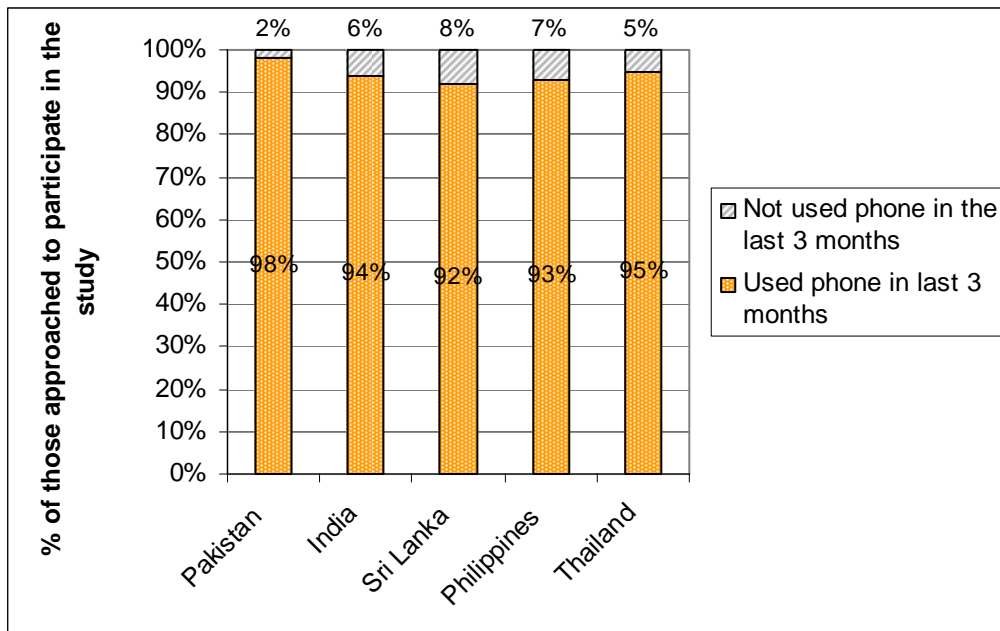


Figure 1: Use of a phone in the three months preceding the study.

However, what we find is that while people have access to many different modes of telecommunication (personal mobile phones, household fixed phones, public phones, neighbours' phones, relatives and friends' phones, etc.) ownership patterns vary significantly across the region as seen in Figure 2.

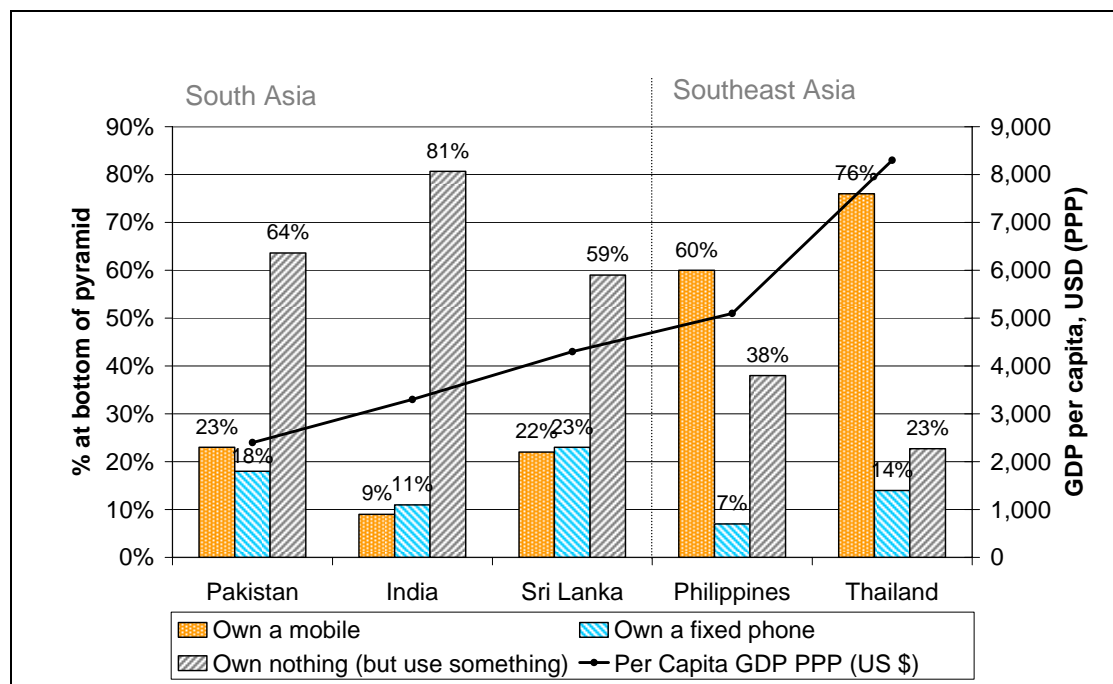


Figure 2: Ownership patterns at the BOP and national *Gross Domestic Product*

Ownership at the BOP is high in the richer Southeast Asian countries, with relatively higher levels of mobile ownership (with some instances of people owning more than one mobile

connection) and lower levels of fixed ownership.<sup>20</sup> Among the South Asian countries, overall phone ownership at the BOP is much lower, particularly in India.

However, even where ownership is low, non-owners have several options to access telecom, and do not have to travel far to use a phone—most can get to a phone in less than 5 minutes. Non-owners in Southeast Asia tend to use mobiles of other household members, or friends' and relatives' phones as their main method of communication reiterating the wider penetration of mobile phones. Non-owners in South Asian mostly rely on some kind of public phone (public call office, telecommunication centre or public phone booth). This finding is important in the discussion of access to telecoms; whether universal service<sup>21</sup> should be a policy objective of developing country Governments through subsidies if universal access can be achieved through competition in the market.

The use of more than one SIM card was also seen across the region with Pakistan (12% of mobile owners), Philippines (12%) and Sri Lanka (9%) at the higher end. The reason for this could be to avail of different rates and/or promotions from different service providers at different times. All of the SIM cards owned may not necessarily be active.

In contrast to many developed countries, more than 90 percent of mobile owners at the BOP in all five countries are pre-paid subscribers as seen in Table 5. The primary reason for such being, prepaid connections allow for the control their expenditures. Except for Sri Lanka<sup>22</sup> and Thailand, the same pattern was seen in the SEC A, B and C sample as well.

**Table 5. Type of mobile connection**

	South Asia						Southeast Asia			
	Pakistan		India		Sri Lanka		Philippines		Thailand	
<i>SEC group</i>	ABC	DE	ABC	DE	ABC	DE	ABC	DE	ABC	DE
<b>Pre Paid</b>	99 %	99 %	94 %	95 %	80 %	92 %	95 %	99 %	86 %	96 %
<b>Post Paid</b>	1 %	1 %	6 %	4 %	20 %	8 %	5 %	1 %	14 %	4 %
Base (Mobile Owners)	287	246	210	309	198	104	75	605	304	267

#### 4.2 Perceived impacts of direct access to a phone

Many studies over time have concluded that access to telecom has a fairly strong impact on growth and economic development. The literature survey contained in Section 2 discussed some of these. However, as pointed out in the literature survey, few of these findings have been empirically supported at the micro-level.

In general, two kinds of income benefits originating from telecom access can be distinguished. Firstly, direct income generation through the sale of telecom services, i.e., resale of minutes; i.e., the Grameen Village Phone model, where significant income benefits are seen across the board is an example. This paper does not examine such benefits. The second kind, which is the focus of this paper, are less direct, but can include the use of a phone by an auto-rickshaw driver to keep informed about hires, or the transaction cost savings made by making a call as opposed to taking a bus ride into town; in the latter case, both the monetary cost (bus fare) as well as the time cost can be considered. In theory, the time saved can be used in a more productive manner, perhaps having some impact on income.

<sup>20</sup> Ownership of a fixed phone was defined at the household level, whereas that of a mobile phone was at an individual level.

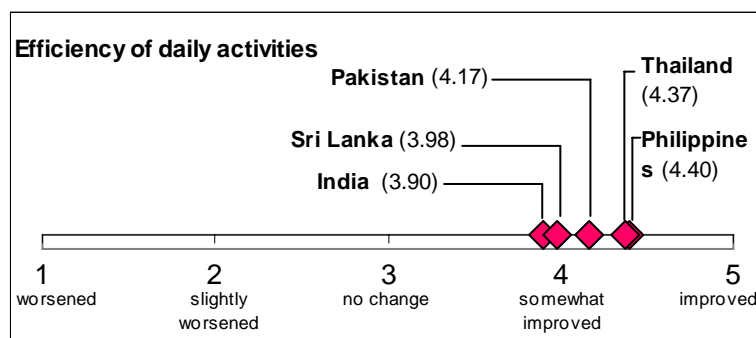
<sup>21</sup> See footnote 17

<sup>22</sup> The Sri Lankan case can be explained by a 'post-paid' legacy; with Sri Lanka being the first country in South Asia to introduce mobile services in 1989, at which time, 'prepaid' packages had not yet evolved, and hence post-paid packages were the only alternative.

The current study seeks to ascertain quantifiable evidence at the household level in the BOP of such income benefits. We look at how direct access to telecom (or ownership) is perceived to increase efficiency of daily activities at the BOP and how telephone owners at the BOP see that as translating to either a greater income earning or cost savings, if at all. In order to capture this, owners of phones were asked to rate on a five-point scale, *inter alia*, the extent of the impact that direct access (that is ownership – either through a personal mobile phone or household fixed phone) has had on:

- a) the efficiency of their daily activities; and
- b) their ability to earn more using the phone or save a certain expense that would have been incurred without the phone.

Across the five countries, those at the BOP strongly perceive that the efficiency of their daily activities has 'somewhat improved' due to telephone ownership. There is no major variation in the individual country perception and the ratings are clustered around 4. This is very much an intuitive finding and we have been able to support it using data with a high level of confidence.

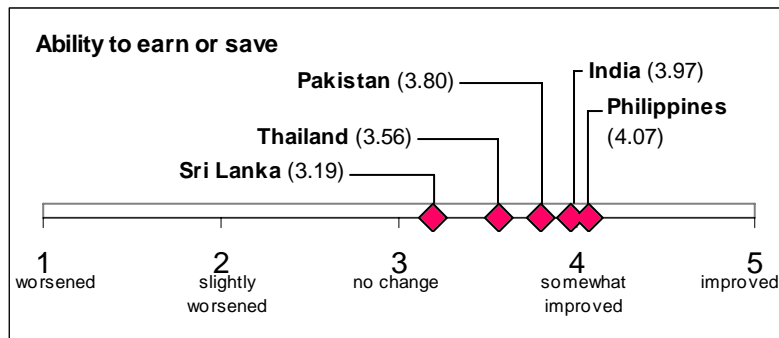


**Figure 3: The impact of direct access to telecom on the efficiency of daily activities (mean response)**

In general we find that people value highly the contactability any time, anywhere that (particularly) mobile communication allows. In fact, the contactability brought about through phones is one of the key reasons that are seen to be driving people to get their own connections. The ability to obtain information (any information) in an instant is also highly valued. Some interesting findings that emerged from the Pakistani qualitative studies, the only Muslim country where separation of men and women were relatively more pronounced, were that the males supported the notion that mobiles have reduced the dependence of females on the males in running general home errands.

When it comes to perceived economic benefits, there are mixed feelings at the BOP with the mean response ranging from 3.19 in Sri Lanka to 4.07 in the Philippines, as seen in Figure 4. Indians seem to be obtaining the most economic benefits from direct access with an increment of their perception score moving up from 3.90 for efficiency gains to 3.97 in ability to earn or save. On the other hand, Filipinos who perceive economic benefits at 4.07 however rates it lower than efficiency gains at 4.40. 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. In all the countries except India, the mean responses on the first of the two aspects (i.e., efficiency of daily activities vs. ability to earn or save) were significantly lower at a 95 percent confidence interval. In these countries, many respondents at the BOP do not see as much economic benefit arising from access to telecom as they do efficiency gains, with the cluster around 'somewhat improved' for efficiency gains (Figure 3) being spread out and towards 'no change' in terms of ability to earn or save (Figure 4). There appears to be a 'disconnect,' in people's perceptions between efficiency gains (for e.g. saving travel time and cost) and financial gains, which at the outset seems counter-intuitive. There are a number of possible reasons for this.





**Figure 4: The impact of direct access to telecom on the ability to earn more using the phone or save a certain expense that would have been incurred without the phone (mean response)**

Firstly, a reason for this finding that access to telecom is not necessarily seen as increasing the earning and cost saving potential is perhaps because people at the BOP do not use phones *directly* for business purposes (such as purchasing supplies, etc), as seen in the diary responses (Table 6 below), as well as in other studies (Zainudeen et al., 2005; Souter et. al, 2005). It appears that people prefer other modes for their business communication, for example, Souter et al. (2005) found that face-to-face communication is 'overwhelmingly' the preferred mode for specific information relating to farming, business, education, and political or government matters. Perhaps changing historical and cultural factors in the region placing importance of face-to-face contact for business purposes may take time even though the benefits of using the phone instead seem theoretically more beneficial.

**Table 6: Main purpose of calls (as a percent of all calls recorded in the sample)**

	South Asia			Southeast Asia	
	Pakistan	India	Sri Lanka	Philippines	Thailand
Business	14%	14%	8%	15%	29%
Keep in touch with family/friends	82%	72%	65%	64%	70%
To check something or deliver message	4%	14%	27%	21%	2%
Base – total number of calls	16306	29748	6115	6467	16674

Another reason for this finding could be the relative importance of a barter economy at the BOP, whereby there is a large degree of overlap between family/friends and business contacts. As a result, the lines between economic transactions and social communications become blurred. For example, it may be implicit that one's brother looks after you when times are hard and although your brother is effectively your insurer, one may not assign a positive economic value to a weekly call to 'keep in touch' with one's brother; instead, one may only see it for the direct cost that is incurred. This is evident in the vast majority who stated that having access to the phone has enhanced their family and social relations, discussed later in this section.

A third reason for the relatively lower perception of economic benefits vis-à-vis efficiency benefits due to telecom ownership could be high perceptions of the cost of service; this could be the case in Sri Lanka, where startlingly, a quarter of phone owners felt that having access to a telephone had in fact worsened their ability to increase their incomes or make savings. Here, phone owners may feel that the cost of service (may or may not be actual) is greater than the benefits gained, thus leaving a net cost. For instance in Sri Lanka, the worst performer on this count, it was found that perceptions of how much it costs to make a call were higher than in other countries. Moreover, Sri Lanka is the only country among the five not to have a Calling Party Pays (CPP) regime, in that in Sri Lanka receiving a call on a mobile phone also attracts a charge.

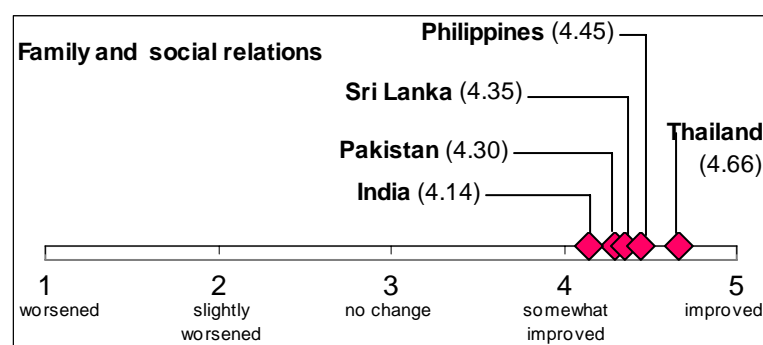
Notwithstanding the above we find that in India, Pakistan and the Philippines, for example, more than 60 percent of those engaged in agriculture feel that access to telecom improves both the efficiency of their daily activities as well as improving their ability to earn or save more. This goes to show that not only the cost, but also the availability of relevant information (for instance agricultural prices via phone and SMS etc.) perhaps plays an important role in translating efficiency gains in to financial gains.

Furthermore, a reason for the 'disconnect' could be the mere fact that there is a limited group within society who make direct earnings by using a phone, i.e., those that sell minutes and those that use the phone to sell their product or service; these are the kinds that are most likely to see a connection between the telephone and their earnings, if any.

The relevant point is that the efficiency gains that are created via greater access to telephony at the BOP are not necessarily seen as translating in to poverty alleviation through greater direct income generating potential. As discussed here there are a number of reasons for this outcome.

Besides the above impacts, the study also considered the impacts of access to telecoms in enhancing family and social relations; status and also in acting in an emergency.

Phone owners by and large testify that access to a phone can enhance their family and social relations. (Seen in Figure 5, as well as Table 6). This finding concurs with much of the existing research in the developing world; Souter et al (2005) find a highly important use of the phone in Gujarat (India), Mozambique and Tanzania is for 'social' purposes, such as maintaining contact with family. A separate study conducted in South Africa and Tanzania found that the benefits from mobile phones for communities include 'improved relationships' according to almost four fifths of those surveyed (Vodafone, 2005). A pilot study to the one under discussion in 11 localities in India and Sri Lanka found similar levels of use of the phone for 'keeping in touch' (Zainudeen, Samarajiva and Abeyseriya, 2005). Furthermore, early research carried out by Keller (1977) and Noble (1987), into the 'uses and gratifications' of conventional telephone use found social or relationship maintenance uses to be more prevalent than utilitarian, or instrumental uses.<sup>23</sup>

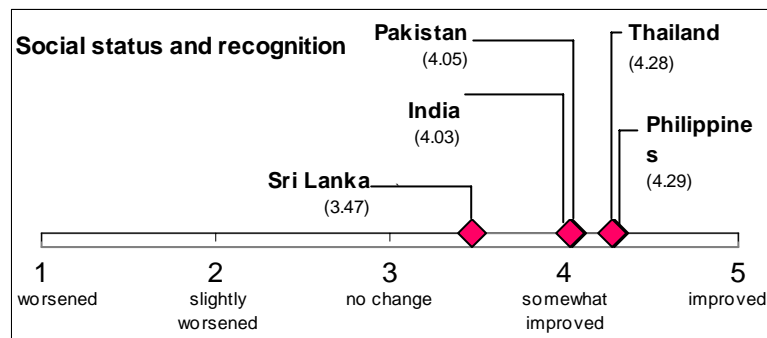


**Figure 5: The impact of direct access to telecom on family and social relations (mean response)**

<sup>23</sup> Cited in Wei and Lo, 2006; p.56

The qualitative findings reinforced this sentiment, with many citing the importance of phones in maintaining relationships, building up new ones, and feeling connected to loved ones, as well as the outside world.

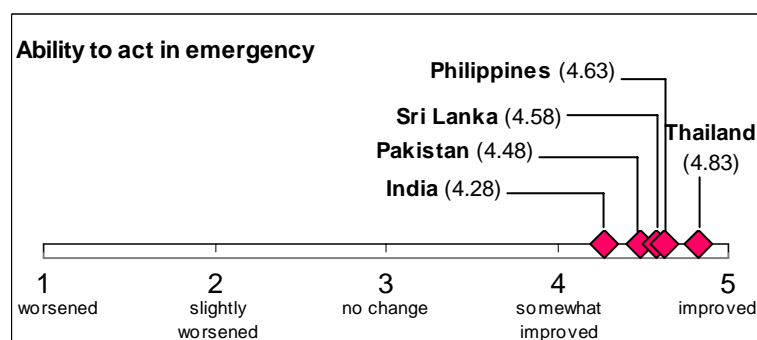
Except for Sri Lanka, around two-thirds of all telephone owners in the five countries seem to feel that ownership of a telephone has enhanced their social status and recognition in their community; in Sri Lanka, just over one third feel this way. Similar results were seen by Zainudeen et al (2005), with a much weaker concern for the symbolic aspects (i.e., fashionability and improved social status) in Sri Lanka than in India.



**Figure 6: The impact of direct access to telecom on social status and recognition (mean response)**

Even though not necessarily a direct positive relationship between owning a telephone and higher social status, it was found in the qualitative studies that in all countries, most feel that the fact that phones, in particular mobile phones are more accessible to people of all socio-economic backgrounds helps in reducing the 'gap' between the rich and the poor leading to a feeling of 'upliftment' among the poor. This finding perhaps has a lot more qualitative meaning in the inequality and poverty debate through social inclusion type arguments than can be established in this mainly quantitative study.

The biggest and most widespread impact of access to telephones at the BOP is in creating a sense of security; the ability to act in an emergency. The ability to contact someone or even get help in the event of conflict, illness or death or even a broken bicycle (cited by participants in the qualitative studies) for example is an important benefit of access. Souter et al. (2005) similarly found the most important use of phones in a study of the impact of telecom on rural livelihoods in India, Mozambique and Tanzania. This is intuitive, given the very nature of a telephone allowing instantaneous communication regardless of distance, most crucial during an emergency. As one might expect, elders tended to see more of a benefit, with the mean response for those aged 56 and over being significantly higher than that of the other age groups. The benefits of telecom, especially mobiles can also be seen in disaster management, from warning through response and recovery stages (Samarajiva, Knight-John, Anderson and Zainudeen, 2005).



### Figure 7: The impact of direct access to telecom on the ability to communicate in an emergency (mean response)

It emerged strongly from the qualitative studies that in Pakistan, the only predominantly Muslim country in the group where women are less independent and more home-oriented, that access to a telephone helped women at home contact men in times of emergency making them feel much more secure.

Again, a point to note is that, this study is not designed to undertake any comprehensive analyses of the poverty and inequality debate in terms of access to telecoms which seem to create a greater sense of security among the poor.

## 5.0 Concluding remarks

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 without having to spend any significant amount of time or money in getting to a telephone. Another way of interpreting this finding is that there appears to be universal access at the BOP in these countries, bringing to the forefront the validity of the argument of the existence of any significant inequality in access. However the gap between those who use telecom services and those who actually own a telecom device is extensive indicating a vast potential for greater ownership of telephones in the region. This potential could be as high as 150 million new connections in the next two years, given policy makers and operators could make such connections and use thereafter affordable.<sup>24</sup>

Telephone ownership is perceived to provide a much higher benefit in providing a sense of security in terms of acting in an emergency and in maintaining social relationships than benefiting financially though the potential for greater income earning ability and saving costs at the BOP. While the necessary condition for such is by and large met in terms of access improving efficiencies in daily activities, the problem seems to lie in the perceptions of meeting the sufficient condition of the net benefit of such efficiency gains being fulfilled.

High prices, both perceived and actual (due to use of commercial and other people's phones) appear to be a considerable hindrance for users at the BOP, preventing phone owners (and in the same spirit, probably non-owning users) from availing of net benefits of access. In Sri Lanka, where prices were found to be a particular issue, part of this could be explained by the Receiving Party Pays (RPP) regime in place, whereby both the caller and the callee incur charges for every call on a mobile phone.<sup>25</sup> Given that Sri Lanka is the only country out of the five who subscribe to this regime, it could be an explanation for the higher price perceptions, low usage and also a preference for fixed phones.<sup>26</sup>

Another equally or even more important issue is the inability at the BOP to clearly identify the link between efficiency gains and its transmission in to potential for greater income generation and/or cost saving. For instance, users at the BOP do not seem to see how instant access to important information might be helpful in making decisions that could enhance one's earning capacity or how gaining an hour (otherwise spent personally conveying a message by foot) could help reduce transactions costs. Telecom operators perhaps could change such perceptions through marketing campaigns and drawing attention to the fact that saving an hour could contribute to one's income, directly or indirectly.

These two 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: fight poverty through growth and run profitable telecommunication companies.

<sup>24</sup> de Silva, Zainudeen and Cader, forthcoming publication, based on other findings of the same study

<sup>25</sup> Although as a means to get around this, most mobile operators allow varying numbers of minutes of 'free incoming' calls on different packages.

<sup>26</sup> This was seen in the data, however, was not reported in this paper.

Further investigation into this area could help understand the dynamics of the relationship between telecom access and income at the household level. Telephones alone will never be a silver bullet that will bring the hundreds of millions of people out of poverty in the emerging Asian region, but the almost-universal access will most certainly aid in that process together with other supporting policies.

## References

- Bayes, A., von Braun, J. & Akhter, R. (1999) Village pay phones and poverty reduction: Insights from a Grameen Bank initiative in Bangladesh. *Information and Communication Technologies and Economic Development*. vol.8 ZEF Discussion Papers on Development Policy No. 8. Bonn: Centre for Development Research, ZEF. Bonn, 31 May-1 June.
- Cohen, A. A. and Lemish, D. (2003) Real time and recall measures of mobile use: Some methodological concerns and empirical applications, *New Media and Society*, Vol.5(2):162-183
- Cruse, L., Patullo, E., Lamb, P. and Dollery, B. (undated) Measuring the demand for mobile telephony in rural Australia: is mobile telephony for remote Australian Communities a natural monopoly?
- Cronin, F. J., Colleran, E. K., Parker, E. B. and Gold, M. A. (1993b) 'Telecommunications Infrastructure Investment and Economic Development', *Telecommunications Policy*, 17(6): 415-430. Bibliography 351
- Dialog Telekom. (2006). Highlights 2005. Retrieved on 27 October 2006 from [http://www.dialog.lk/en/corporate/ir/downloads/quarterly\\_reports/2005/fy\\_2005\\_investor\\_forum.pdf](http://www.dialog.lk/en/corporate/ir/downloads/quarterly_reports/2005/fy_2005_investor_forum.pdf)
- Donner, J. (2005). The mobile behaviors of Kigali's microentrepreneurs: whom they call...and why. In Kristof Nyiri, ed., *A Sense of Place*. Vienna: Passagen Verlag
- Gillwald, Alison (Ed.) (2005). Towards an African e-Index: Household and individual ICT access and usage across 10 African countries. Research ICT Africa!
- GSMA. (2005). Tax and the digital divide: How new approaches to mobile taxation can connect the unconnected. London: GSMA
- Hardy, A. P. (1980) 'The Role of the Telephone in Economic Development', *Telecommunications Policy*, 4(4): 278-286.
- Intelecon. (2005). Nigerian Demand Study: Highlights Report, with eShekels for the Nigerian Communications Commission, supported by World Bank. Retrieved January, 26, 2006, from <http://www.inteleconresearch.com/pages/news.html>.
- Intven, Hank (Ed.) (2000). *Telecommunications Regulation Handbook*. Washington DC: infoDev
- Malik, P., and de Silva, H. (2005) Diversifying Network Participation: Study of India's Universal Service Instruments, WDR Discussion Paper 0504, at <http://www.lirneasia.net/projects/completed-projects/universal-service-india-case-study/>
- McKenzie, J. (1983). The accuracy of telephone call data collected by diary methods. *Journal of Marketing Research* (pre-1986); Vol. 20 (November 1983); p. 417-427
- NOKIA. (2006). Mobility in Action, *New Horizons Newsletter* Q1 2006.p.4.
- Ovum. (2006). The Economic and Social Benefits of Mobile Services in Bangladesh: A case study for the GSM Association. London: GSMA
- Parker, E. B, Hudson, H. E. et al. (1995) *Electronic Byways: State Policies for Rural Development through Telecommunications*, revised Second Edition, Washington DC: Aspen Institute
- Prahalad, C.K. (2004). *The fortune at the bottom of the pyramid: Eradicating poverty through profit*. Upper Saddle River, New Jersey: Wharton School Publishing.
- Richardson, D., Ramirez, R., Haq, M. (2000) Grameen Telecom's Village Phone Programme in Rural Bangladesh: a Multi-Media Case Study Final Report, TeleCommons Development Group (TDG)
- Roller, L., & Waverman, L. (2001). Telecommunications Infrastructure and Economic Development: A Simultaneous Approach. *American Economic Review*, 91(4), 909-23. Retrieved Thursday, October 19, 2006 from the Econlit database.
- Samarajiva, R., Knight-John, M., Anderson, P. and Zainudeen A. (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, <http://www.lirneasia.net/2005/03/national-early-warning-system/> , 17 March.
- Souter D., Scott, N., Garforth C., Jain R., Mascarenhas O., and McKemey, K. (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)

- TRAI. (2006) The Indian Telecom Services Performance Indicators: April-June 2006, October 2006. Retrieved on 27 October 2006 from [www.trai.gov.in](http://www.trai.gov.in)
- Waverman, L., Meschi, M., & Fuss, M. (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 Retrieved: November, 02, 2005, from [http://www.vodafone.com/assets/files/en/SIM\\_Project\\_download\\_2.pdf](http://www.vodafone.com/assets/files/en/SIM_Project_download_2.pdf).
- Wheatley, J. J. (1998). Price elasticities for telecommunication services with reference to developing countries. Retrieved on 17 October 2006 from <http://www.lse.ac.uk/collections/media@lse/pdf/Wheatley%20paper%2003.02.2006.PDF>
- Williams, Mark (2005) Mobile networks and Foreign Direct Investment in developing countries, in *Africa: The Impact of Mobile Phones. The Vodafone Policy Paper Series Number 3* March 2005, p.24-40
- Vodafone. (2005). Africa: The Impact of Mobile Phones in the Developing World. *Moving the debate forward*. The Vodafone Policy Paper Series, No. 3, March 2005. Retrieved: November, 02, 2005, from [http://www.vodafone.com/assets/files/en/SIM\\_Project\\_download\\_2.pdf](http://www.vodafone.com/assets/files/en/SIM_Project_download_2.pdf).
- Zainudeen, A., Samarajiva, R. & Abey Suriya, A. (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*. Available at: <http://www.lirneasia.net/wp-content/uploads/2006/02/Zainudeen%20Samarajiva%20AbeySuriya%202006%200teleuse%20strategies.pdf>

## Annex 1: Country-wise Quantitative sample composition

Table A1. Quantitative sample composition for Pakistan

Province	Urban	Rural	Total
Punjab	430	456	886
Sindh	300	168	468
NWFP	100	168	268
Baluchistan	70	120	190
Total	900	912	1812

Table A2. Quantitative sample composition for India

Region	State	Total Sample	Sample (SEC DE)				Sample (SEC ABC)
			Urban		Rural		
			Male	Female	Male	Female	
North	Uttar Pradesh	400	35	30	130	125	80
	Haryana	400	50	45	115	110	80
West	Rajasthan	400	40	40	120	120	80
	Gujarat	400	55	55	105	105	80
East	Bihar	400	15	15	145	145	80
	West Bengal	400	50	45	115	110	80
South	Tamil Nadu	400	75	70	90	85	80
	Karnataka	400	55	55	105	105	80
North East	Assam	400	25	25	135	135	80
	Arunachal Pradesh	400	35	30	130	125	80
Total		4000	435	410	1190	1165	800

Table A3. Quantitative sample composition for Sri Lanka

Province	Urban	Rural	Total
Western	85	200	285
Central	20	140	160
Southern	20	125	145
North Western	20	115	135
North Central	15	70	85
Uva	20	85	105
Sabaragamuwa	20	115	135
Total	200	850	1050

SEC Split	ABC		250
	DE		800
	Total		1050

Table A4.

Quantitative sample composition for Philippines

SEC	Total	Urban = 54 %	Rural = 46 %
ABC	100	54	46
DE	1000	540	460
TOTAL	1100	594	506

Areas covered: The study covered Metro Manila, Luzon, Visayas, Mindanao.

Table A5. Quantitative sample composition for Thailand

For the upcountry area, the study was conducted in four regions namely North, Northeast, Central and South. Two key provinces were selected to represent the regions

SEC	Upcountry Urban	Upcountry Rural	Total
Upper (AB)	50	50	100
Middle (C)	50	50	100
Low (DE)	250	250	500
Total	350	350	700