Separating myth from reality: do location and gender matter for mobile ownership ?

CPRSOUTH8/2013 **POLICY BRIEF**

The literature on the digital gender divide is extensive. Equally extensive are the varying explanations and the degree to which it occurs. Hilbert (2011) bought pause to proclamations of extensive digital gender divide by suggesting that that it disappears or is greatly reduced if one accounted for education and income. To our knowledge, there is no prior empirical work that attempts to shed light on the digital gender divide in terms of an urban/rural context. Given the large rural population in developing Asia, an explication of these factors in a rural context, can sharpen the design of policy targeting the gender divide in ICT access and use.

This research sheds light on the effects of gender and location (urban or rural) on mobile phone ownership in six countries in emerging Asia. This research uses two datasets covering a nationally representative sample of the Bottom of the Pyramid (BOP). The sample is also representative of gender levels at urban and rural levels in each of the sample countries. The first dataset covers Bangladesh, India, Pakistan, Sri Lanka and Thailand whilst the second covers Indonesia (only Java).

SUMMARY OF FINDINGS

1. **Gender seems to matter:** We find that gender has a strong negative effect on mobile ownership in most of our sample countries. However since variables such as education affect ownership amongst men and women differently, the disparate access and ownership could be addressed by concentrating on increasing women's access to education rather than ICTs.
2. **Being rural matters little:** Rural locations have only a very weak negative effect on mobile ownership in most study countries, and furthermore this result is not statistically significant. The exception is Indonesia (Java), where there is a strong negative effect.
3. **Country context matters**. Even amongst the study countries, clear differences are seen with respect to the effect of gender and location on mobile ownership. This necessitates for a more country specific policy (rather than a generic one) with regards to reducing (and ultimately eradicating) the digital gender divide.

THE RESEARCH

I METHODOLOGY

To study mobile phone ownership, this paper adopts a logit adoption model similar to the one used by de Silva, Ratnadiwakara, & Zainudeen (2011). The particular logit model used in this analysis is called a binary response model using a cumulative logistic distribution function for the underlying sample. The function for the logit model is as below

$$\text{Probability } (\mathbf{Y}) = \frac{1}{1+e^{-(\beta_1+\sum_{i=2}^{n}\beta_i x_i)}}$$

Here Y is the independent variable denoting mobile ownership. The explanatory variables used in this model includes: location (rural or urban); gender; age; Ln of household income; primary education (yes or no); secondary education (yes or no); tertiary education (yes or now); number of contacts (upto 5) with a mobile phone; economic Perceived Benefits Index (PBI) which is constructed using respondent responses to questions regarding usefulness of phone on economic aspects; emergency PBI (constructed using respondent responses to questions related to the potential benefits of mobile phones in emergency situations; social PBI (constructed using respondent responses to questions regarding usefulness of phone on social aspects); household fixed phone (yes or no); household electricity access (yes or no); household television (yes or no); and household radio (yes or no).

II DATA SOURCES

This research used two datasets from the Teleuse at Bottom of the Pyramid 4 (Teleuse@BOP4) study to run the model. The T@BOP4 survey was conducted in six countries (Bangladesh, Pakistan, India, Sri Lanka, Thailand and Indonesia) in June 2011. Excluding the Indonesian data, the sample in the other 5 countries was representative of the Bottom of the Pyramid

(BOP) using the two lowest socio-economic classifications (SEC) D and E. In Indonesia the survey is representative of only the main island of Java and the BOP was defined as those who earn less than USD 1.25 per day. Java is home to more than half the population of Indonesia and at least 51 percent of the country's poor. In all cases, the samples are representative at gender and location levels for the BOP in the respective countries. Table 1 below lists the sample sizes form each of the target countries.

Table 1: Sample sizes and composition

Country	Urban		Rural		Total
	Male	Female	Male	Female	
Bangladesh	267	264	739	780	**2050**
Pakistan	291	408	487	648	**1834**
India	269	328	1145	1433	**3175**
Sri Lanka	84	92	400	624	**1200**
Thailand	177	170	215	238	**800**
Indonesia (Java Only)	155	115	416	403	**1088**
Total	**1243**	**1377**	**3402**	**4126**	**10147**

III RESULTS & DISCUSSION

Table 2 below represents the results of the model for each of the 6 countries. Only some variables are presented here for succinctness and relevance to this brief. Furthermore only the change in odds is given here, which reveals the odds of an event occurring. For example we can interpret the value of -0.669 for Java for the location variable as follows: the odds of mobile ownership decrease by 66.9% when the location is rural.

Table 2: Change in odds for select variables

	BD	PK	IN	LK	TH	Java
Location (1= rural, 0=urban)	-0.019	-0.167	-0.024	-0.053	0.429	**-0.669**
Gender (1=female; 0= male)	**-0.787**	**-0.854**	**-0.795**	-0.17	**1.472**	**-0.789**
Age	**-0.023**	**0.024**	-0.005	**-0.014**	-0.002	**-0.068**
Household income	**0.747**	-0.263	**0.541**	**0.816**	0.451	0.156

Note: Values in red are significant at the 95% confidence interval. Blank cells denote no effect

As evident from Table 2, a rural location generally has a weak negative impact on mobile ownership in all countries except in Indonesia (where the negative effect is strong) and Thailand (where it is a positive effect). However, these results are not statistically significant in our model, except in Indonesia (Java). But these results should bring pause to suggestions that rural locations are significantly disadvantaged when it comes to ICT access and ownership.

Our model shows being a female has a consistently statistically significant negative impact on mobile ownership in all the sample countries except in Thailand, where the effect is reversed.

Prima facie the findings with respect to gender contradict Hilbert (2011) who found that amongst select countries from Africa and Latin America, the digital gender divide disappeared when accounting for education and income. Ours find that even when we consider these other variables the digital gender divide persists. However if run our model on a gender and location disaggregated sample (i.e. separate regressions for rural men, rural women, urban men and urban women), we gain some additional insights. For example our preliminary analysis for Pakistan suggests the following: The odds of mobile ownership amongst rural men increase by 246% when they have primary education. However amongst rural women, having primary education increases the odds of mobile ownership by 1157%. This suggests that the digital gender divide could in fact be addressed by increasing women's access to primary education.

The effects on the gender and location disaggregated samples show how much country context matters. For example in Sri Lanka where literacy rates are high, there is no difference of the effect of primary education amongst men and women. This necessitates for a more country specific policy (rather than a generic one) with regards to reducing (and ultimately eradicating) the digital gender divide.

SOURCES

de Silva, H., Ratnadiwakara, D., & Zainudeen, A. (2011). Social Influence in Mobile Phone Adoption: Evidence from the Bottom of the Pyramid in Emerging Asia. *7*, pp. 1-18. USC Annenberg School for Communication & Journalism

Hilbert, M. (2011). Digital gender divide or technologically empowered women in developing countries? A typical case of lies, damed lies and statistics. *Women's studies International forum, 6*, pp. 479-489.

AUTHORS

Sriganesh Lokanathan | Senior Research Manager, LIRNE*asia* | sriganesh@lirneasia.net

Ranmalee Gamage | Junior Researcher, LIRNE*asia* | ranmalee@lirneasia.net