

The Strategic use of mobile phone among poor people in some Latin American Countries.

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Outline

1. Motivation
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1. Motivation.

- Diffusion of Mobile differs across countries and within countries.
- Mobile telephony includes several functionalities as voice, data, video, etc.
- There exist price differentials between off net and on-net communications
- Poor people must minimize their spendings in goods and services that are considered as a luxury goods.
- There are a set of strategies available for minimizing mobile cost of use.

1. Motivation (cont.)

- Latin American countries are characterized for low per capita income, low growth rates and a considerable proportion of rural population.
- These conditions difficult the access to modern ICTs and their benefits.
- ...Then, the importance of mobile in standard of living is crucial for their future development.

2. Objective

- The purpose of the paper is to study the use of several strategies for minimizing the cost of mobile telephony among poor people in Latino American countries.
- What are the determinants of use of these strategies?
- How many strategies are used?

3. Related literature

- There are two branch in the literature:
- 1. Patterns of use:
 - Zainudeen et al, (2006), Donner (2008), Ramirez and De Angoitia (2008)

3. Related literature (cont.)

- 2. Diffusion theory.
 - Botelho and Costa Pinto(2004) , Carvalho (2006), Michalakelis, Voroutas, and Sphicopoulos (2008), Doganoglu and Grzybowski (2007), Gamboa and Otero (2008)
 - Jang, Dai, and Sung (2005) for OECD countries and Taiwan;
 - Gruber and Verboven (2001) for the 15 members states of the European Union.

4. Data

- We use a survey carried out in the “Mobile Opportunities: Poverty and Access to telephony in Latin American and the Caribbean” research sponsored by IDRC and managed by DIRSI.
- This study was made among **Poor-households** from the following countries: Argentina, Brazil, Colombia, Jamaica, México, Peru, and Trinidad and Tobago

4.Data (cont)

- The survey was carried out in most than 7000 observations.
- Each observation is a person randomly extracted from a selected household.
- Some questions are done to users (owners and no owners) and others to owners.
- For comparability, we exclude Jamaica, and Trinidad and Tobago.

4.Data (cont)

- In our case, we are interested in studying the use of the following strategies:
 - Beeping
 - SMS
 - Off-peak calls
 - Phone receiver.

In other paper, Gamboa and Gutierrez (2008) study the use of resale of mobile minutes on the streets as a public phone.

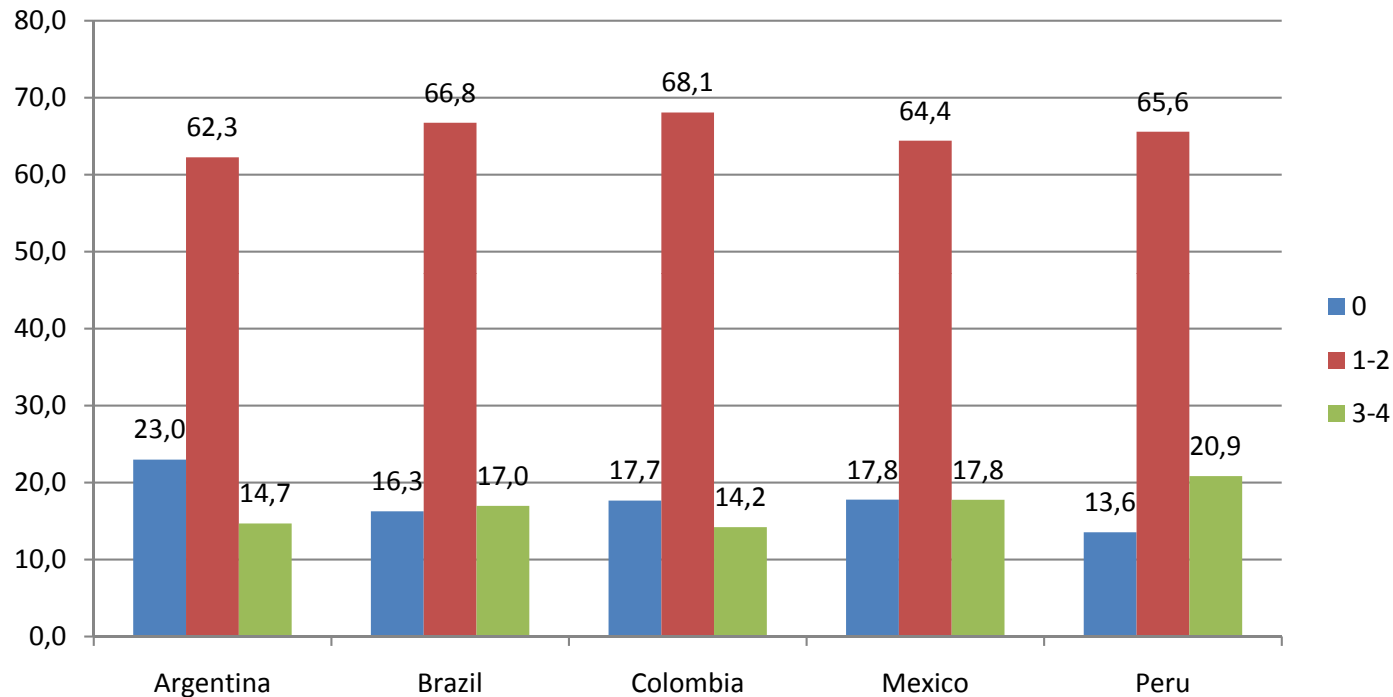
5. Metodology and Results

Some frequencies in the sample

	Argentina	Brazil	Colombia	Mexico	Peru
Socioeconomic					
% Female	50.4	61.1	68.1	72.6	60.7
Age (mean)	34.8	36.7	38.1	36.7	37.1
% Higher education					
Access and Usage					
% Users	70	53	89	37	60
% Prepaid	74	96	90	92	96
Calls made (median)	6.69	6.55	11.08	7.06	7,33
SMS sent (median)	33.3	8.09	8.13	25.91	8.73
Strategies (% of owners)					
Beeping	15,7	32,2	43,5	24,5	47,1
off-peak calls	17,2	29,2	28,0	27,2	40,6
phone receiving	33,3	49,9	56,7	57,0	51,0
SMS	69,9	36,0	44,0	52,0	44,0
Total Surveys	1400	1000	800	1000	1312
Total owners	849	424	492	298	465

Intensity of use

Number of Strategies used by country
(% of owners in the sample)



Source: DIRSI Survey.

Metodology

- We test two questions:
- What are the determinants of use?
 - Probabilistic Model (Probit, Logit)
- How many strategies are used?
 - Count Data model (Poison, Negative Binomial)

Determinants of Use

- We use a PROBIT model that capture, what is the probability that a person uses one strategy.
- Due to estimated coefficients are not interpretable as in traditional *Ordinary Least squares*, we only report marginal effects.

Determinants of Use

(Marginal effects of Probit Model)

	SMS				
	Argentina	Brasil	Colombia	México	Perú
Men	-0.013 (0.01)	0.071*** (0.02)	0.009 (0.03)	-0.022 (0.07)	-0.005 (0.05)
Young	0.043*** (0.01)	0.63* (0.04)	0.083*** (0.04)	0.577 (0.08)	-0.150*** (0.08)
Overcrowding	0.016*** (0.01)	-0.004 (0.01)	-0.015 (0.01)	0.003 (0.02)	0.009 (0.02)
Education	0.059*** (0.01)	0.029 (0.10)	-0.044*** (0.02)	0.134 (0.14)	-0.174*** (0.06)
Prepaid	-0.007 (0.01)	0.078 (0.04)	0.294 (0.03)	0.235 (0.09)	0.20*** (0.12)
ict	-0.003 (0.07)	0.044*** (0.02)	0.032*** (0.018)	0.174*** (0.05)	-0.004 (0.05)
Use Intensity	0.001 (0.00)	0.0017*** (0.00)	0.001*** (0.00)	0.001 (0.00)	0.003 (0.23)
N	849	416	492	230	396
ll	-169,54	-266,58	-319,71	-130,71	-227,58

Determinants of Use

(Marginal effects of Probit Model)

ONLY FOR RECEPTION

	Argentina	Brasil	Colombia	México	Perú
Men	-0.007 (0.03)	-0.658*** (0.22)	-0.132*** (0.05)	0.056 (0.07)	-0.022 (0.04)
Young	0.015 (0.04)	0.147 (0.28)	0.021 (0.08)	-0.032 (0.09)	-0.012 (0.08)
Overcrowding	0.017 (0.01)	0.126 (0.08)	-0.004 (0.03)	0.017 (0.03)	-0.014 (0.02)
Education	-0.013 (0.04)	0.694 (0.70)	-0.145*** (0.05)	-0.039 (0.13)	0.056 (0.06)
Prepaid	0.103 (0.04)	2.740*** (1.07)	0.294*** (0.08)	0.041 (0.13)	-0.083 (0.16)
ict	-0.000 (0.03)	0.114 (0.16)	-0.005 (0.04)	-0.087 (0.06)	0.071 (0.04)
Use Intensity	-0.004 (0.00)	-0.042*** (0.01)	0.001 (0.00)	-0.003 (0.00)	-0.008*** (0.004)
N	849	416	492	230	396
ll	-526,17	-263,64	-319,71	-156,27	-181,27

Determinants of Use

(Marginal effects of Probit Model)

	OFF-PEAK				
	Argentina	Brasil	Colombia	México	Perú
Men	0.023 (0.03)	0.042 (0.04)	-0.032 (0.04)	0.006 (0.06)	0.140*** (0.05)
Young	0.066*** (0.03)	0.019 (0.06)	0.045 (0.07)	0.072 (0.09)	0.030 (0.09)
Overcrowding	-0.003 (0.01)	0.000 (0.02)	0.029 (0.02)	0.033 (0.02)	-0.039*** (0.02)
Education	0.022 (0.03)	-0.123 (0.11)	-0.043 (0.04)	0.148 (0.13)	-0.035 (0.06)
Prepaid	0.011 (0.03)	-0.061 (0.12)	0.036 (0.06)	0.069 (0.10)	0.092 (0.16)
ict	-0.045*** (0.02)	0.039 (0.03)	-0.011 (0.03)	-0.185*** (0.06)	-0.073 (0.05)
Use Intensity	0.000 (0.00)	0.002 (0.00)	0.002 (0.00)	0.004 (0.00)	-0.08*** (0.04)
N	849	416	492	230	396
ll	-375,41	-246,15	-289,08	-133,53	-268,54

Determinants of Use

(Marginal effects of Probit Model)

	BEEPING				
	Argentina	Brasil	Colombia	México	Perú
Men	0.016 (0.02)	-0.06 (0.04)	-0.072 (0.04)	-0.098** (0.05)	-0.012 (0.05)
Young	0.061*** (0.03)	0.115* (0.06)	0.212*** (0.07)	-0.064 (0.07)	0.208*** (0.09)
Overcrowding	0.020*** (0.01)	0.008 (0.02)	0.031 (0.02)	0.016 (0.02)	0.023 (0.02)
Education	0.017 (0.03)	-0.233*** (0.09)	0.105*** (0.05)	0.156 (0.12)	0,02 (0.06)
Prepaid	-0.023 (0.03)	0.040 (0.11)	0.009 (0.08)	0.076 (0.10)	0.104 (0.14)
ict	-0.032* (0.02)	0.027 (0.03)	0.048 (0.04)	-0.013 (0.05)	0.055 (0.04)
Use Intensity	-0.000 (0.00)	0.001 (0.00)	0.004*** (0.00)	0.002 (0.00)	-0.059 (0.04)
N	849	416	492	230	396
ll	-356,60	-256,47	-321,71	-131,11	-222.43

Intensity of Use

- We test a count data model in which dependent variable Y is the number of strategies used:

$Y = 0$ if the person does not use any strategy

1 if the person uses one strategy

.....

4 if the person uses all the available strategies

Intensity of Use

- Count data models are used when:
 - Dependent variable is discrete
 - Their fluctuation is small
 - Dependent variable is non-negative
- We use Poisson regression Models

Intensity of Use

Poisson Regression Model -Marginal Effects

Dependent Variable : **Number of Strategies Used**

	Argentina	Brazil	Colombia	Mexico	Perú			
Gender	0.0081 (0.06)	-0.227*** (0.10)	-0.226 (0.10)	-0.192*** (0.09)	-0.183*** (0.08)	-0.0589 (0.14)	-0.07 (0.14)	0.115 (0.10)
Young	0.2170*** (0.07)	0.171* (0.12)	0.230*** (0.12)	0.352*** (0.15)	0.350*** (0.15)	0.050 (0.17)	0.052 (0.17)	0.091 (0.18)
Schooling	0.1134** (0.06)	-0.046 (0.24)	-0.169 (0.21)	-0.113 (0.08)	-0.117 (0.08)	0.353 (0.37)	0.286 (0.30)	0.140 (0.13)
Overcrowding	0.055 (0.02)		0.045 (0,03)		0.048 (0.04)	0.065 (0.05)		-0.02 (0.06)
Prepaid	0.0827 (0.07)	0.501 (0.20)	0.440 (0.20)	0.283*** (0.14)	0.293*** (0.14)	0.4061** (0.22)	0.365* (0.20)	0.331 (0.32)
ICT	-0.08*** (0.04)	0.01 (0.07)	0.130 (0.07)	-0.018 (0.07)		-0.086 (0.10)	-0.1038 (0.10)	0.421 (0.10)
Capital city	0.004 (0.07)	-0.205*** (0.10)	-0.21*** (0.10)	0.442*** (0.11)	0.430*** (0.11)	-0.100 (0.15)	-0.124 (0.14)	-0.096 (0.13)
Intensity of Use	-0.003 (0.00)	0.001 (0.00)	0.002 (0.00)	0.007*** (0.00)	0.007 (0.00)	0.002 (0.01)	0.011 (0.01)	-0.218 (0.09)
Per capita income		-0.001 (0.00)		-0.001 (0.00)			-0.0000 (0.00)	
N	849	416	372	492	492	230	230	396
ll	-1.156,41	-596,81	-534,13	-739,71	-670,44	-336,09	-334.28	-595,46

6. Concluding remarks

- It is common to find multiple strategies in each mobile user
- Education is an important determinant in the knowledge of the mobile complements.
- There are differences across countries in the strategies more often used.
- More develop country, more strategies used
- In long run, some strategies disappear as a consequence of reduction in price differentials.

Thank you

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