MOBILE LEARNING USING MOBILE PHONES

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ABSTRACT

The participation in mobile learning programs is conditioned by having/using mobile communication technology. Those who do not have or use such technology cannot participate in mobile learning programs. This study evaluates who are the most likely participants of mobile learning programs by examining the demographic profile and mobile phone usage patterns of those who use their mobile phones to access the internet. The results reveal that using the mobile phone to access the internet is more likely among young people and males. These users are also more likely to explore more functions of the mobile phone such as the camera, the calculator or the agenda than those who do not use the mobile phone for internet-access.

KEYWORDS

Mobile learning participation, internet-capable mobile phones.

1. INTRODUCTION

In recent years there is a growing tendency to own smartphones or internet-capable mobile phones. The expectation is for this tendency to maintain as in 2011 the selling of smartphones surpassed the selling of basic-feature mobile phones (IDC 2011). The penetration rate of this type of devices is however much different across countries. In Europe, Sweden and Spain have the highest rates (35%); at an international level Singapore is the top country in terms of smartphones penetration rate (54%) (Go-gulf 2012). Additionally, it is difficult to find consistent information regarding penetration rates of smartphones. In the case of Portugal, according to TNS report the penetration rate of smartphones is 9% (TNS 2012); the Marktest' telecommunication Barometer reports a penetration rate of 4.2% (Marktest 2012) and cross-countries investigations report a penetration rate above 30% (Sterling 2011).

The participation on mobile learning programs is restricted to people that possess and/or knows how to use internet-capable mobile devices such as mobile phones, PDA's or laptops. According to a recent report from the mobile manufacturer Ericsson (2012), by 2015, 80% of internet accesses will be made using mobile phones. Although this is good news for those developing and implementing mobile learning programs it is not synonymous of full coverage of the population regarding participation in m-learning programs. In the particular case of Portugal, despite having internet-capable mobile phones not all users use the mobile phone to access the internet. According to TNS (2012), 40% of mobile phone users with internet-capable devices do not use the internet access function, probably for cost reasons.

This study evaluates who are the most likely participants of mobile learning programs by examining the demographic profile and mobile phone usage patterns of those who use their mobile phones to access the internet.

2. DATA AND METHODS

Data comes from a mobile phone survey conducted by Marktest in 2012. The survey covered the general Portuguese population of mobile phones users aged 15 years or older. The questionnaire included questions regarding the use of mobile phones. The sample of numbers to contact was selected using a random digit dialing procedure. A total of 1,500 completed interviews was accomplished.

The analysis starts with a comparison between individuals who use their mobile phone to access the internet and individuals who do not in terms of demographic characteristics. A binary logistic regression model is subsequently estimated to identify the characteristics that strongly differentiate the two groups. The dependent variable is the "internet access on the mobile phone" coded as 1-yes and 0-no. The independent variables are sex, age, education level, professional situation, marital status and social class.

In a second step the analysis compares the two groups of mobile phone users in terms of mobile phone usage patterns.

3. RESULTS

Table 1 presents the rate of internet-access on the mobile phone by subgroups of the population in terms of sex, age, educational level, professional status, marital status and social class. For each demographic characteristic only the subgroup with the highest rate is presented.

Table 1. Rate of internet-access on the mobile phone by subgroups

Characteristic: subgroup	Rate
Sex: male	23.9%
Age: 15-24 years	35.0%
Education level: university	30.1%
Professional status: employed by a third party	23.7%
Marital status: single	30.4%
Social class: A (upper)	37.3%
Overall sample	19.0%

The overall access rate is 19%, with strong differences across subgroups. The highest percentage of internet access is found in the upper social class – 37.3% - and in the younger's group (aged 15-24 years) – 35%.

A binary logistic regression model was then estimated to identify which demographic characteristics most distinguish those who use their mobile phones to access the internet and those who do not. A preliminary analysis allowed multicollinearity to be detected among some independent variables thus excluding some variables from entering the analysis. As a consequence the model was estimated solely with age and sex as predictors. Both main effects and interaction effects were tested.

Table 2 presents the estimates of the model. Both age and sex have a significant effect ($p<0.001$). The interaction effect was not statistically significant ($p>0.1$). Specifically, the likelihood of using the mobile phone to access the internet increases as age decreases. In odds metrics for every internet-access mobile phone user aged 65 or older (the reference category) there are 16 internet-access mobile phone users in the 15-24 years group (odds=16.8:1). Additionally, using the mobile phone to access the internet is more likely among males than females (odds=1.882:1).

Table 2. Binary logistic regression estimates of using the mobile phone to access the internet

Characteristic	β	Odds ratio
Sex (ref: female)		
Male	+0.632***	1.882
Age (ref: 65 +)		
15-24	+2.821***	16.800
25-34	+2.530***	12.556
35-44	+2.117***	8.304
45-54	+1.366*	3.921
55-64	+1.061*	2.890
Constant	*–3.793***	

*p<0.05, ***p<0.001.

Subsequently a comparison between internet-access mobile phones users and other users was made regarding the use of 12 functions of the mobile phone. The outcomes reveal statistically significant differences in 11 out the 12 comparisons made (Table 3).

Table 3. Functions of the mobile phone used by type of mobile phone use (%)

Functions of the mobile phone used	Internet-access	No internet access	Difference
Make personal calls	96.8	94.6	+2.2
Make professional calls	56.1	36.7	+19.4***
Receive professional calls	58.9	39.3	+19.6***
Send SMS	92.3	62.8	+29.5***
Use the alarm clock	81.8	50.8	+31.0***
Listen to music	51.9	16.5	+35.4***
Take photos	84.9	41.4	+43.5***
Listen to the radio	30.2	13.7	+16.5***
Use the calculator	76.5	38.2	+38.3***
Play games	44.6	11.4	+33.2***
Consult/edit agenda	66.7	29.6	+37.1***
Send MMS	50.5	15.2	+35.3***

***p<0.001.

With the exception of "make personal calls" internet-access mobile phones users have higher percentages of facilities' usage than no-internet-access mobile phone users. The strongest differences can be described as follows: among the internet-access group there are 84.9% users who use the mobile phone to take photos (vs. 41.4% among no-internet-access mobile phone users), 76.5% use the mobile phone as a calculator (vs. 38.2%) and 66.7% use the mobile phone to consult/edit the agenda (vs. 29.6%).

4. CONCLUSION

Accessing the internet on the mobile phone is something that will increase in the future as the ownership of internet-capable mobile phones increases. However, for now only a small percentage of the Portuguese population – near 20% - uses their mobile phones to access the internet; moreover, there are strong differences across subgroups. But even in the "best rate" groups – upper social class and younger – the rate does not reach 40%.

The idea that mobile learning is for everyone is therefore a reality not yet upon us. Not only the coverage rate of mobile phone internet access must increase, globally and at subgroups level, but also the ability to use the mobile devices, which tend to be, in technologic terms, increasingly complex, must improve.

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