

# Adoption of Mobile Internet Services in Chile: An Exploratory Study

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*Abstract:* - The main objective of this study is to explore differences on the adoption of mobile Internet services on a sample of Chilean users. A survey based on constructs of individual acceptance models is the tool used to measure the acceptance of mobile Internet of the respondents. We used Kruskal–Wallis one-way analysis of variance to compare differences between groups. In summary, results show that some constructs of users' behaviour of acceptance of mobile Internetservices manifest statistically significant differences associated with gender, age and experience.

*Key-Words:* -Information technology acceptance models, mobile internet services, Chile.

## 1 Introduction

In recent years, Chile has consolidated its leadership in Latin America in terms of information technology [1]. In particular, the penetration rate of mobile phones and the current percentage of Internet users is outstanding [2]. In fact, according to international statistics, the percentage of individuals using the Internet has been increasing in Chile. These figures are above the regional average and doubling the average of developing countries. Today, this percentage is very close to the value of some countries of the European Union[3]. Moreover, mobile Internet usage has had a remarkable growth in Chile due to the navigation on smartphones (penetration rate was 22.1 users per 100

inhabitantsin June 2012, five times its use since 2009)[2]. Using mobile Internet refers to Internet access via a mobile device such as a smartphone, a phone or a tablet, connected to a mobile communications network. The Chilean government estimates indicate that demand for mobile Internet services will grow 18 times over the next four years[2].

Although there is a vast research on the acceptance of mobile Internet in other cultures: Anglo-Saxons and mainly Asian [4-7], there is a gap in the study of this phenomenon in Latin-American cultures, as the Chilean. In this context, to explore the acceptance of mobile Internet from an individual perspective in Chile is important. In addition, testing

differences between users groups reported before in the literature is an interesting topic.

The main objective of this study is to explore differences on the adoption of mobile Internet services for a sample of Chilean users.

The article is structured as follows. First, we explain the constructs considered in the investigation. After, we describe the empirical research, and finally we detail the results and conclusions.

## 2 Literature review

The acceptance of technologies at the individual level is an important topic in information technology management [8]. Consequently, several models can be found in the literature to explain the acceptance of information technology at the individual level: Theory of Reasoned Action (TRA) proposed by Fishbein and Ajzen[9], Theory of Planned Behaviour (TPB) proposed by Ajzen[10], Technology Acceptance Model (TAM) suggested by Davis[11], TAM2 proposed by Venkatesh and Davis[12], TAM3 recommended by Venkatesh and Bala[8], Unified Theory of Acceptance and Use of Technology (UTAUT) proposed by Venkatesh, Morris, Davis and Davis[13] and UTAUT2 planned by Venkatesh, Thong and Xu[7].

Next, we will present the constructs (or latent variables) collected for our study based on those models.

Use (USE) is the frequency of using information technologies[7, 8, 11-13]. USE has been proposed as the final consequence in the models of information technology acceptance.

Behavioural intention (BI) is the degree to which a person has formulated conscious plans to perform or not perform some specified future behaviour [7, 9, 11, and 13]. In the context of the acceptance of information technology, BI has been suggested as an antecedent of USE.

Performance expectancy (PE) is the degree to which using a technology will provide benefits to individuals in performing certain activities[7, 13]. In the context of the acceptance of information technology, PE has been proposed as an antecedent of BI.

Effort expectancy (EE) is the degree of simplicity associated with individuals' use of technology[7, 13]. In the context of the acceptance of information technology, EE has been suggested as an antecedent of BI.

Social influence (SI) is the extent to which individuals perceive that other important people believe they should use a particular technology[7, 9,

and 13]. In the context of the acceptance of information technology, SI has been proposed as an antecedent of BI.

Facilitating conditions (FC) is the individual's perception of the resources and support available to perform behaviour[7, 13]. In the context of the acceptance of information technology, FC has been suggested as an antecedent of BI and USE.

Habit (HT) is the extent to which people tend to perform behaviours automatically because of learning[7]. In the context of consumer acceptance of information technology, HT has been proposed as an antecedent of BI and USE.

Hedonic motivation (HM) is the fun or pleasure derived from using a technology [7]. In the context of consumer acceptance of information technology, HM has been suggested as an antecedent of BI.

Price value (PV) is the individuals' cognitive trade-off between the perceived benefits of the applications and the monetary cost for using them[7]. In the context of consumer acceptance of information technology, PV has been proposed as an antecedent of BI.

Attitude (ATT) is the individual's positive or negative feeling about performing the target behaviour[9, 11]. In the context of the acceptance of information technology, ATT has been suggested as an antecedent of BI.

Image (IMG) is the degree to which use of an innovation is perceived to enhance one's status in one's social system[8, 12]. In the context of the acceptance of information technology, IMG has been proposed as an antecedent of PE.

Job relevance (REL) is the individual's perception regarding the degree to which the target system is relevant to his or her job[8, 12]. In the context of the acceptance of information technology, REL has been proposed as an antecedent of PE.

Output quality (OUT) is the degree to which an individual believes that the system performs his or her job tasks well[8, 12]. In the context of the acceptance of information technology, OUT has been suggested as an antecedent of PE.

Result demonstrability (RES) is the tangibility of the results of using the innovation[8, 12]. In the context of the acceptance of information technology, RES has been proposed as an antecedent of PE.

Computer self-efficacy (AE) is the degree to which an individual believes that he or she has the ability to perform specific task/job using computer[8]. In the context of the acceptance of information technology, AE has been suggested as an antecedent of EE.

Computer anxiety (CANX) is the degree of an individual's apprehension, or even fear, when she/he is faced with the possibility of using computers[8]. In the context of the acceptance of information technology, CANX has been proposed as an antecedent of EE.

Computer playfulness (CPLAY) is the degree of cognitive spontaneity in microcomputer interactions[8]. In the context of the acceptance of information technology, CPLAY has been suggested as an antecedent of EE.

### 3 Methodology

Empirical research was based on a non-random sampling method. Quota sampling was used to select participants based on age range and gender of Chilean Internet users [14]. Data were collected in two important cities in Chile through a face-to-face survey in November 2012. The exclusion of invalid questionnaires provided a final sample size of 501 mobile Internet users, 266 males and 235 females. The 60% of participants have more than one year of experience in the use of mobile Internet services. Table 1 shows the survey sample.

Table 1. Survey sample description.

Age	All (N=501)	Men	Women
13-14	5.6%	2.4%	3.2%
15-19	15.4%	8.8%	6.6%
20-24	16.0%	8.0%	8.0%
25-34	25.3%	13.4%	12.0%
35-44	18.6%	10.0%	8.6%
45-59	15.2%	8.0%	7.2%
60 and more	4.0%	2.6%	1.4%
<b>TOTAL</b>	<b>100.0%</b>	<b>53.1%</b>	<b>46.9%</b>

The applied measurement scales have been tested in other research. Specifically, to measure USE, BI, PE, EE, SI, FC, HT, HM and PV the scales proposed by [7] have been adapted, to measure ATT the scale recommended by [15] has been adjusted, to measure IMG and RES the scales proposed by [16] have been revised, to measure REL and OUT the scales suggested by [12] have been adapted, and finally to measure AE, CANX and CPLAY the scales recommended by [13] have been adjusted.

Kruskal–Wallis one-way analysis of variance test was used to analyse differences in the different constructs.

### 4 Results

A 7-point Likert typescale was applied. SPSS software was used for the statistical analysis. Table 2 shows results of analysis of reliability of scales, indicating an appropriate goodness of fit.

Table 2. Analysis of reliability.

Latent Variable	Composite reliability	Cronbach's Alpha
PE	0.913	0.856
EE	0.948	0.926
SI	0.961	0.939
FC	0.801	0.667
BI	0.933	0.893
USE	Formative	
HT	0.911	0.853
HM	0.951	0.923
PV	0.967	0.949
ATT	0.945	0.912
IMG	0.959	0.935
REL	0.955	0.929
OUT	0.934	0.895
RES	0.898	0.774
AE	0.930	0.898
CANX	0.920	0.883
CPLAY	0.929	0.898

Results of the descriptive statistics and Kruskal–Wallis one-way analysis of variance are shown in Table 3.

Table 3. Scores and Kruskal–Wallis Test by gender.

Latent Variable	All (N=501)		Men (N=266)		Women (N=235)		K-W Sig.
	Avg.	SD	Avg.	SD	Avg.	SD	
PE	6.00	1.11	5.99	1.15	6.02	1.06	0.88
EE	6.20	1.03	6.27	1.05	6.13	1.00	<b>0.03</b>
SI	4.80	1.59	4.80	1.62	4.80	1.55	0.81
FC	6.02	0.95	6.03	0.97	6.00	0.93	0.52
BI	5.63	1.22	5.61	1.24	5.65	1.19	0.89
USE	4.00	1.14	3.90	1.04	4.11	1.24	<b>0.04</b>
HT	4.68	1.60	4.70	1.59	4.66	1.60	0.70
HM	5.84	1.23	5.76	1.19	5.94	1.26	<b>0.02</b>
PV	4.23	1.62	4.05	1.60	4.43	1.63	<b>0.01</b>
ATT	5.87	1.10	5.87	1.10	5.88	1.10	0.91
IMG	3.25	1.86	3.21	1.82	3.29	1.92	0.74
REL	5.16	1.58	5.31	1.49	5.00	1.66	<b>0.04</b>
OUT	5.05	1.34	5.04	1.30	5.05	1.38	0.87
RES	5.62	1.19	5.67	1.14	5.57	1.25	0.51
AE	2.68	1.79	2.67	1.85	2.70	1.72	0.60
CANX	2.35	1.68	2.38	1.71	2.31	1.65	0.58
CPLAY	4.80	1.57	4.84	1.53	4.76	1.62	0.68

As you can see in the last column of Table 3, results of Kruskal–Wallis one-way analysis of variance indicated statistically significant differences between the scores of men and women in EE, USE, HM, PV and REL. Considering the aforementioned results we can indicate that some differences exist between men and women in relation to perceptions of the use of mobile Internet services. The men from the sample perceived the use of mobile Internet services easier. Also, they indicate that the use of this technology is most relevant to their work. The women from the sample indicate that they use mobile Internet services more frequently than men. In addition, women feel more enjoyment from this use; also, they value more positively the relationship between benefits and the monetary cost of using this technology than men.

Table 4 shows the mean values and Kruskal–Wallis one-way analysis of variance by range of age.

Table 4. Averages and K–W Test by range of age.

Latent Variable	13-14 (N=28)	15-19 (N=77)	20-24 (N=80)	25-34 (N=127)	35-44 (N=93)	45-59 (N=76)	60+ (N=20)	K-W Sig.
PE	5.96	6.03	5.90	6.13	6.03	6.00	5.40	0.27
EE	6.36	6.43	6.39	6.36	6.13	5.88	4.90	<b>0.00</b>
SI	5.61	4.45	4.54	4.94	4.70	4.88	5.30	<b>0.00</b>
FC	6.11	6.14	6.03	5.99	6.05	5.99	5.45	0.28
BI	5.75	5.42	5.48	5.84	5.55	5.82	5.20	0.06
USE	4.25	4.05	3.76	4.13	4.03	3.96	3.55	0.30
HT	5.39	4.42	4.61	4.98	4.43	4.68	4.25	<b>0.01</b>
HM	6.11	6.09	6.13	5.97	5.56	5.54	5.10	<b>0.00</b>
PV	4.57	3.96	3.85	4.35	4.39	4.36	4.30	0.14
ATT	6.18	5.97	5.89	5.94	5.76	5.75	5.55	0.12
IMG	4.43	2.52	3.01	3.10	3.28	3.59	4.75	<b>0.00</b>
REL	4.96	4.56	5.00	5.38	5.51	5.26	5.05	<b>0.00</b>
OUT	5.68	4.77	4.50	5.15	5.19	5.29	5.15	<b>0.00</b>
RES	6.00	5.52	5.40	5.67	5.57	5.76	5.70	0.22
AE	3.25	2.29	2.60	2.49	2.66	3.11	3.50	<b>0.02</b>
CANX	2.43	2.34	2.30	1.94	2.24	2.84	3.65	<b>0.00</b>
CPLAY	1.87	1.74	1.68	1.42	1.36	1.94	2.01	<b>0.00</b>

There are statistically significant differences between the scores of age range in EE, SI, HT, HM, IMG, REL, OUT, AE, CANX and CPLAY. These results indicate the importance of the consumer's age of mobile Internet services when evaluating many of the variables associated with the acceptance and use of this technology.

Table 5. Scores and K–W Test by experience.

Latent Variable	Low experience		Medium experience		High experience		K-W Sig.
	Avg.	SD	Avg.	SD	Avg.	SD	
PE	5.73	1.32	6.00	1.03	6.28	0.88	<b>0.00</b>
EE	5.86	1.31	6.33	0.81	6.42	0.80	<b>0.00</b>
SI	4.74	1.55	4.83	1.60	4.83	1.62	0.74
FC	5.77	0.99	6.06	0.91	6.22	0.90	<b>0.00</b>
BI	5.28	1.24	5.68	1.26	5.92	1.07	<b>0.00</b>
USE	3.77	1.20	4.08	1.06	4.14	1.13	<b>0.01</b>
HT	4.26	1.65	4.74	1.66	5.04	1.36	<b>0.00</b>
HM	5.70	1.32	5.94	1.20	5.89	1.15	0.20
PV	4.21	1.58	4.14	1.57	4.33	1.71	0.52
ATT	5.62	1.19	5.88	1.11	6.12	0.94	<b>0.00</b>
IMG	3.33	1.84	3.29	1.91	3.11	1.84	0.52
REL	5.40	1.22	5.62	1.25	5.83	1.07	<b>0.00</b>
OUT	4.86	1.31	4.93	1.39	5.35	1.26	<b>0.00</b>
RES	5.40	1.22	5.62	1.25	5.83	1.07	<b>0.00</b>
AE	2.94	1.91	2.66	1.82	2.44	1.60	0.09
CANX	2.59	1.73	2.32	1.75	2.13	1.52	<b>0.03</b>
CPLAY	4.51	1.67	4.94	1.47	4.96	1.53	<b>0.04</b>

Table 5 shows the results of the descriptive statistics and Kruskal–Wallis one-way analysis of variance by experience.

There are not statistically significant differences between the scores of experience in SI, HM, PV, IMG and AE. For the rest of variables there are statistically significant differences. These results indicate the great importance of the consumer's experience of mobile Internet services when

evaluating many of the variables associated with the acceptance and use of this technology. We note that when respondents' experience increase also increase the perceived performance and ease of use of mobile Internet services. Additionally, the habit of use increases with increasing experience. In relation to this, the same phenomenon happens with attitude, intention of use and frequency of use of technology.

## 5 Conclusion

In conclusion, we underline three main contributions of this study.

Firstly, the measure scales used in the empirical research show a very good reliability. It is remarkable the fact that this is the first time that these scales have been tested in a Chilean sample of mobile Internet users.

Secondly, the findings indicate slight gender differences in mobile Internet users. In fact, a previous research on the acceptance and use of web technologies in Chilean samples had found no significant gender differences [17]. In our results, men are presented as little savvier and more utilitarian oriented than women. However, women are presented as little more enjoyers and with a little more frequent use of mobile Internet services than men. And last, but not least, women are more satisfied with the relation between the price and the value of mobile Internet services. Can the above fact associated with the value assigned to these women to be able to enjoy this technology beyond just utilitarian use to work?

Thirdly, we draw attention to the relationship shown between experience and development of the habit of using mobile Internet services. Therefore, the more attitudes towards them, the more increasing the intention of using them, and finally, the more frequent use of these services. Apparently, the experience is a key cause to increase the desire to use mobile Internet services.

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