

THE ORDINARY MOBILE TELEPHONE AS AN ENHANCING FACTOR FOR SENIOR CITIZENS' MOBILITY

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The appearance of the “pocket size” telephonic terminal (today known as the cellular or mobile phone) produced a strong negative prejudice in our society.

In Spain a lot of jokes were made and quickly spread (proof of this prejudice) ridiculing those people who used these new devices.

Another proof of this prejudice is the legal discrimination that the mobile phone has suffered compared to other telematic devices (the use of mobile phone when driving is strongly punished in many countries –such as Spain- while nothing is said about the radio-CD or GPS, e.g., the management of which concerns even more complex tasks, requirements and distraction effects).

Therefore, the use of the mobile phone has become common place, even among people that were initially more reticent.

The reasons for its success...

Maximum expression of individual freedom and confidentiality
(in the telecommunication field):

- You call a person, the person with whom you want speak, not a place (home, office,...).
- That person can accept your call or not, and in addition decide the time period in which he/she will be available to attend calls.
- You can be communicated with and located in any place and time (limited only by the company coverage, a limitation which is gradually disappearing).

- In 25 EU countries the mobile phone subscriptions reached 80% inhabitants in 2003 (*Eurostat, 2004; 2005*).
- Further, for some member states the penetration rate in 2003 was close to 90% (*Communication from Commission of 19 November, 2003*).

The penetration rate has been so great that very early sales-executives and researchers began to think of other possible uses besides simple verbal communication between two people...

- Besides simply talking, the capacity of sending messages and images has been added.
- Parents have found a good way to control their children...
- Users have found a means to obtain security out of doors: According to Perez (1996) 13% of users have had to call, at least once, to ask for help in situations of personal emergency from their mobile phone. Even, for some, it is considered an arm against gender violence.
- Medical sectors have studied the great possibilities that the mobile phone offers in diverse medical applications: Alzheimer's disease, Asthma, Hypertension,...

Beyond personal communication, it can also be considered as virtually a “small personal assistant with antenna”.

New applications directly related with the area of transport have also been developed:

- To Know traffic conditions in real time.
- Finding the best itinerary by public transport or location of the place or service desired.
- Getting tourism information and reservations.
- To communicate a road accident/incident and ask for help.

- Small payments for some public services:
 - those that need a low level of identification,
 - micro-payments case (less than 10 €).

Public transport tickets

Parking fees in blue zones

Malaga (Spain), France, Finland

Cork (Ireland)

Advantages:

- Easier authentication.
- Good alternative when rapidity/celerity is a decisive factor (Taxi, Publ.Transp.,).

Disadvantage:

- Low penetration of this way of payment due to
- Safety of transmission + consumer's protection.
- Acceptance as a trustworthy means of payment.

-But, the mobile phone industry seems to have lost sight of other significant changes of our time...

→ the AGEING population.

- Industry completely focused on the young sector of market,
- losing out on an enormous opportunity to attend to the needs of and win over senior citizens.
- The market of older users of mobile phones remains widely unexploited and potentially lucrative enough.

→ However...

Some reports (*Empocket*, 2004) show that, contrary to popular belief, mobile phone penetration is still growing and the elderly demographics are leading this growth:

- Penetration in the 65+ group has grown at a rate of 42% per year.
- In Europe, the prospective for 2010 for those aged 65 or more who will use wireless services has been estimated at between 30% to 50% (Forge et al., 2005).
- In Spain, 32% of adults over 65 are mobile users (still some way from the 70% general).

For some time now, there has been an increment of studies interested in how senior citizens can benefit from such new technologies (with special attention to the mobile phone):

The EU project LOCOMOTION (IST. 2001-32180) is devoted to the investigation, development, and testing of an innovative location service for the Elderly and disabled citizens based in the mobile telephone.

The *European SeniorWatch Observatory* carried out a market study about the specific IST needs (*information society technologies*) of older and disabled people to guide the industry, RTD projects and policies. In these studies older Europeans appear to regard the mobile as a security device (*SeniorWatch*, 2002).

Senior Citizens' Organizations themselves have started to show real interest in ongoing activities, innovative projects and practical examples of specific mobile applications to their needs of independence and mobility (*Bundesarbeitsgemeinschaft Der Senioren-Organisationen*, 2005).

Works as such Fubini (2002), Mollenkopf & Kaspar (2002) and Marcellini, Marcucci & Freddi (2002), which have pointed out the relevance of the new technology for senior citizens.

The EU Commission opened a recent public consultation on the New Information Society Strategy for beyond 2005 (*EU Commission*, 26 November 2004 – 17 January 2005). The rapidly ageing population has been considered a challenge to take into account.

Finally, it is worth mentioning the *OECD-MIT International Symposium* celebrated in Cambridge, Massachusetts in September 2003, devoted to *New Transport Technologies for Older People* in which different mobile applications were presented.

Also from our experience in the project *SIZE* (*Life Quality of Senior Citizens in Relation to Mobility Conditions*), we have had the opportunity to know the opinion about this device of those really affected and involved (senior citizens and experts/decision-makers).

The general objective of this paper...

... is to put forward the relevance of the mobile telephone as an enhancing element for the mobility of the senior citizens in the EU,

and more specifically:

-To determine whether there are differences between the degree of usefulness (in terms of its urgency as a solution) attributed by senior citizens and the so called "expert group", and also among the countries taking part in the SIZE project, in regard to the mobile telephone as a facilitating element for the mobility of senior citizens.

- To determine the relative contribution of *having a mobile phone with them* to the senior citizen's autonomy condition in the relative context of the variables considered in the SIZE questionnaires.

Two kinds of samples from 8 European countries took part...

- A) **A LARGE GROUP OF SENIOR CITIZENS** -Condition: aged 65 or more (aprox. 400 from each country).
-Sampling method: proportional *quota sampling* by 3 criteria: “living-area”, “age-group” & “gender”.
- B) **GROUP OF “EXPERTS”** -Condition: politicians, technicians & advisors (ap. 20 of each).
-Sampling method: *expert sample*.

“EXPERTS” SAMPLE DISTRIBUTION	
COUNTRY	N of CASES
Austria	63
Germany	62
Ireland	45
Italy	65
Sweden	61
Poland	60
Czech Rep.	61
Spain	73
TOTAL	490

“SENIOR-CITIZENS” SAMPLE DISTRIBUTION	
COUNTRY	N of CASES
Austria	414
Germany	413
Ireland	413
Italy	414
Sweden	414
Poland	414
Czech Rep.	414
Spain	413
TOTAL	3309

The relevant data for this study comes from two questionnaires developed in the SIZE project. These questionnaires were developed following a method to convert previous qualitative information into quantitative (Monterde-Bort & Moreno, 2004).

The previous qualitative information was gathered by interview methods from responses given by senior citizens and “experts” to 5 questions:

- 1) HOW DO senior citizens COPE with the present mobility situation?
- 2) WHAT ENHANCES the mobility of senior citizens?
- 3) WHAT LIMITS the mobility of senior citizens?
- 4) WHAT MEASURES ARE NECESSARY to improve the situation?
- 5) WHAT PREVENTS MEASURES that are considered useful from being implemented?.

The result was 73 basic statements (common to the 8 countries) over which were elaborated the questionnaire items, classified into 4 logical factors: *fears* -older adult psychological barriers- (9 items), *life-quality indicators related with older-adult mobility* (17 items), *barriers to older-adult mobility* (18 items) and *solutions for older-adult mobility* (19 items).

The circumstance of *having an ordinary mobile telephone with them* (senior citizens) was included as one of the “solutions” items.

Some demographic variables (*Age, gender, pension amount, living-area,...*) were added , and also two indexes to be used as external criteria:

- index of “satisfaction with their life”* (seniors) based in Diener’s scale (Diener et al., 1985);
- index of “autonomy/independence”* based in Lawton-Brody scale (Lawton & Brody, 1969).

THE MOBILE (ORDINARY) TELEPHONE VIEWED AS AN URGENT SOLUTION FOR ENHANCING THE MOBILITY OF SENIOR CITIZENS.

Senior citizens were asked their opinions about to what extent they consider as an urgent solution for enhancing their mobility having an ordinary mobile telephone with them. Having to grade the urgency as: “not urgent” (coded=0), “somewhat urgent” (=1), “quite urgent”(=2) and “very urgent” (=3).

COUNTRY	Not urgent (0)	Somewhat urgent (1) –neutral-	Quite urgent (2)	Very urgent (3)	Quite or Very (2)+(3)
Austria	19.1 %	16.8 %	33.9 %	30.2 %	64.1 %
Germany	39.1 %	25.3 %	23.8 %	11.8 %	35.6 %
Ireland	7.8 %	18.7 %	26.1 %	47.3 %	73.4 %
Italy	23.9 %	20.0 %	39.0 %	17.1 %	56.1 %
Sweden	17.1 %	18.3 %	37.2 %	27.4 %	64.6 %
Poland	37.8 %	26.1 %	24.9 %	11.2 %	36.1 %
Czech Rep.	16.5 %	28.1 %	32.7 %	22.8 %	55.5 %
Spain	36.3 %	19.0 %	25.8 %	19.0 %	44.8 %
TOTAL	24.7 %	21.6 %	<u>30.4 %</u>	23.2 %	53.6 %

Also, the group of “experts” was asked about the same characteristic with reference to seniors

Expert's total sample	Not urgent (0)	Somewhat urgent (1) –neutral-	Quite urgent (2)	Very urgent (3)	Quite or Very (2)+(3)
TOTAL	21.4 %	<u>41.7 %</u>	23.4 %	13.5 %	36.9 %

As a result of the current controversy about significance tests (Wilkinson & The APA Task Force on Statistical Inference, 1999; *APA Publication Manual* -5th ed., 2001), and the particular characteristics of the compared samples (big N's difference and ordinal type variable), we used non-parametric statistics, concretely the *Mann-Whitney U Test*, and offer additionally the (pseudo)Means and its 95% confidence interval limits.

Table 4: Statistical significant differences between older-adults and “experts” in the urgency level given to the availability of ordinary cellular telephone by the senior citizens as a solution for enhancing their mobility.

Compared Group	N (valid cases)	Mean	95% confidence interval around the Mean	Mean Rank	U value	Signif. (2- tailed)
<u>Older-adults</u>	3242	1.52	1.48 ___ 1.56	1892.33	684604.0	p<.001
Experts	482	1.29	1.21 ___ 1.37	1661.84		

→ Statistically significant difference

Senior citizens consider more urgent this solution (mobile phone).

In addition to the above question, the “experts” were asked about the type of cause which prevents this measure from being implemented, among 7 possible types of hindrances used in our study (Monterde-Bort & Moreno, 2004), based in the Banister’s classification (Banister, 2002).

Table 3: Expert’s opinion about what is the main barrier type for implementing the availability of ordinary mobile telephones among the older adult population.

TYPE OF BARRIER	%
1) Coordination problems among Administration competences (conflicts among different Government-Administration levels)	3.8
2) Legal problems (difficulty to fit into legal requirements)	6.3
3) Exclusively financial problems	<u>55.1</u>
4) Negative side effects over other activities (transport, tourism, national industry,...)	3.1
5) Opposition of other collectives (ecologists, handicapped, trade-unions,...)	5.4
6) Cultural barriers (social refuse, religion,...)	<u>23.1</u>
7) Physical-Topographical barriers	3.1

1st2nd

THE IMPORTANCE OF THE ORDINARY MOBILE TELEPHONE IN DEFINING THE “AUTONOMY/INDEPENDENCE” OF SENIOR CITIZENS.

We launched two Discriminant Analysis using all of the 73 variables as predictors, and the *autonomy/independence index* as the criterion (dividing the older-adults sample in two group-levels: “low autonomy group” and “high autonomy group”). One analysis for senior drivers and the other for general sample of senior citizens.

- a) Finding which set of variables, among all studied, is enough to predict the autonomy-independence of senior citizens.
- b) To know the relative contribution of “*having a mobile phone with them*” over senior citizens autonomy.

The in depth analysis of these results exceeds the objectives of this paper, so, as concerns our current interest here, we should highlight :

-Firstly, that *to consider as an urgent mobility solution that senior citizens should have with them an ordinary mobile telephone* was one of the discriminant variables selected among 73 predictor variables introduced.

-Secondly, that this variable occupied 10th place (of 12) in importance for the autonomy prediction of those older-adults **who drive** and 15th place (of 23) for the autonomy prediction of senior citizens **in general**.

From our research results, three conclusions can be made:

- 1) The discovery of the role of the ordinary mobile telephone as an enhancing factor for the mobility and autonomy of senior citizens in Europe. Concerning this result and looking further into it, it is important to highlight that the single and simple circumstance of having an ordinary mobile phone may be a sufficient condition for going out of doors.
- 2) The circumstance that *senior citizens could have a mobile phones with them*, has not received the attention level by politicians, technicians and decision makers which it seems to deserve as a ***telematic solution for enhancing and/or keeping the mobility, autonomy and independence, of our senior citizens***, in the European Union. This solution was considered (statistically significant) less urgent by “experts” group than it was considered by the senior citizens themselves.
- And 3) The circumstance of *having an ordinary mobile phone* appears as an important predictor variable of senior’s autonomy-independence, ahead of some variables related with public transport facilities.

The importance of this new telematic device

as a factor for enhancing the mobility and autonomy of senior citizens

has to lie in the fact that the mobile phone gives senior citizens the security to go outdoors.

The security that offers the possibility of being able to contact their families, health centres or help services when they want.

Consequently, the ordinary mobile telephone has to be included within the group of telematic devices used to improve the safe transport.

Implications for Industry

As consequence of this “new” role given by senior citizens to the ordinary mobile phone, it would be convenient to pay some attention to the question of how to transform mobile phones so that they become more accessible devices to this collective, which includes people with some kind of disability (motor, visual, auditory,...).

So, based on some of the few studies in this direction (IMSERSO, 2004; Collado et al., 2005; Lopez et al., 2005) and on our own experience we want to offer some recommendations to the industry.

These recommendations have to affect both *hardware* and *software* aspects.

Hardware oriented recommendations affecting the design of phone terminals:

- a) Big screens, in order to allow big letters and numbers, and great audio capacity.
- b) Loud ring and vibration mode.
- c) Loud speaker for running in the “hands free” mode. Automatically activated with determinate actions or kind of calls (e.g.: pushing special or programmed keys such as an emergency key or pre-programmed numbers).
- d) Separate and big enough keys, which allow greater tolerance of motor mistakes.
- e) Special key (separate) for emergency number, activated only by pushing once which would turn on automatically the loud speaker.
- f) Numeric keys with the possibility of being pre-programmed with determinate numbers to call them directly only by tapping once and so avoiding the agenda and searches, with automatic switch on of loud speakers when activated. The programmed numbers will be dialled automatically (sons, partner, brothers, physician, hospital,...) turning on the loud speaker automatically.
- g) Handle to hang the phone from the neck (if necessary).
- h) Easy connection to the power supply to charge the battery (plug not too much little).
- i) Few extra functions (games, messages, photos, etc.) which overcharge its use and consume the battery, rather, long battery life.
- j) Rain and shock resistance.
- & k) Preferably with active lid (response only lifting or sliding lid) or with automatic response, to avoid blocking the keyboard thus preventing accidental activation (necessary in models with an uncovered keyboard).

Software oriented recommendations affect the offer of tariff options by the operators.

Operating companies, which cannot ignore that these new devices could bring new users, have also to take part in these initiatives of adaptability and accessibility. So, it would be necessary to introduce a special tariff type for senior citizens.

From our point of view, this tariff type (in some countries called “call plans”) should be designed according two basic characteristics:

- 1) Only calling functions, in other words, no possibility of receiving or sending messages (or the possibility of disabling these functions) or other services which could provoke changes in the screen’s normal aspect. Our experience says that for older people it is a cause of disturbance that the screen changes from that to which they are accustomed. The companies are in the habit of sending messages offering offers, news and diverse information that produce an immediate effect in the appearance of phone terminals, and this produces insecurity, and lack of confidence and anxiety in older owners.
- 2) Emergency and programmed number calls (to programmed keys) should be automatically operated by any company whatever the company contracted may have been.

**THE BIOLOGICAL SCIENCES AND ENGINEERING
HAVE GIVEN MORE YEARS TO LIFE...**

**...WE HOPE THAT THE PSYCHOLOGY WILL GIVE
“MORE LIFE” TO THOSE YEARS...!**

Thanks