Mobile seniors: Mobile use of the Internet using smartphones or tablets by Swiss people over 65 years

Alexander Seifert MA[a,b]

Hans Rudolf Schelling lic. phil.[a]

[a]Center of Competence for Gerontology, University of Zurich, Zurich, Switzerland,
[b]University Research Priority Program 'Dynamics of Healthy Aging', University of Zurich, Zurich, Switzerland, E: alexander.seifert@zfg.uzh.ch; h.r.schelling@zfg.uzh.ch

A. Seifert, H.R. Schelling. Mobile seniors: Mobile use of the Internet using smartphones or tablets by Swiss people over 65 years. Gerontechnology 2015;14(1):57-62; doi:10.4017/gt.2015.14.1.006.00 More and more older people are using smartphones or tablet computers; for many it is a viable substitute for a normal mobile phone, or even an entry into the new digital age. With mobile devices, older people can use mobile Internet at home or on the move. Smartphones and tablets allow mobile access to information and communication, so it provides a mobile guide for older adults in their daily lives. But what is the level of acceptance and use of mobile Internet in the older population, and what factors influence the use of these devices? This paper examined older Swiss peoples' acceptance of and attitudes toward the use of smartphones and tablet computers, as well as mobile Internet. A representative study was conducted: a Swiss survey of 1,037 people aged 65 and older. 56% of the older people interviewed used the Internet in the autumn of 2014. 32% of the interviewed owned a smartphone and 26% a tablet computer. Between the age groups and the sociodemographic groups a divide by the mobile devices was found. 34% of Internet users also use mobile Internet. The data showed that, beside lower age, technological affinity and general attitude towards the Internet are positively associated with the use of mobile Internet. The research also showed that many mobile Internet users describe the use of their smartphone as a resource for coping with daily living.

Keywords: mobile Internet, mobile devices, smartphone, tablet, acceptance, elderly

The Internet society is no longer science fiction. The acceptance of new technology has become a universal theme in our modern age, 'because it is pervasive across all domains of life'[1]. The Internet affects our daily lives, but even today we found a digital gap between generations[2–5]. The use of the Internet by older people is behind the use by younger people worldwide. The younger generations, especially, live in the new digital world of the Internet. It is different for older adults, who did not grow up with these technologies and have less contact with them.

In addition to the non-mobile Internet (mostly on desktop computers at home or at work), mobile use of the Internet has established in recent years[6]. For the mobile use of the Internet, mobile devices such as smartphones or tablet computers were mainly used. As was shown in surveys among all age groups above 18 years, 89% of Swiss people use a smartphone and 21% use a tablet computer to access the Internet while on the move[7]. In 2014, 66% of Swiss Internet users used mobile Internet; in comparison, the proportion in 2010 was only 44%[8]. Nevertheless, with mobile Internet usage the differences between generations is more evident than with general use of the Internet[7]. In the USA, a total of 55% of all inhabitants already have a smartphone, but only 18% of inhabitants at the age of 65 years or older[5]. In the US, 73% of 30-49 year-olds use mobile Internet, but only 22% of people aged 65 and older[9]. The difference in mobile Internet usage in Switzerland is 51% for 14-44 year-olds but only 26% for 60-74 year-olds[7].

Unfortunately, the available international and Swiss data on the usage of mobile devices and mobile Internet by older adults is limited[10]. Accordingly, it is useful to ask how older people use mobile Internet today and which factors influence this use. The present paper aims to develop and focus on the question of how older people (aged 65 years and older) who use mobile Internet are different from their peers who do not use mobile Internet. Furthermore, the question about the impact of smartphones on coping with everyday life should be clarified for older persons.

Materials and methods

Our study in 2014 examined the relatively low Internet usage of older people in Switzerland. This study was the second (the first was in 2009) of a bigger trend study[10]. For the first time, mobile Internet was considered in the current study

Table 1. Characteristics of older people participating in the survey; n=1037

Parameter	Scale	Count	Percentages	
			This study	Switzerland[8]
Gender	Female	547	52.7	56.3
	Male	490	47.3	43.7
Age, years	65–69	304	29.3	29.8
	70–74	289	27.9	23.8
	75–79	202	19.5	18.5
	80–84	134	12.9	14.3
	85+	108	10.4	13.6
Language	French	200	19.3	22.8
	German	730	70.4	67.2
	Italian	107	10.3	9.9
Citizenship	Swiss	970	93.5	89.4
	Other	67	6.5	10.6
Household type	Private	976	94.1	90.5
	Other	61	5.9	9.5
Marital status	Single	65	6.3	7.2
	Married/Partnership	621	60.2	58.0
	Widowed	231	22.4	24.0
	Divorced/Separated	115	11.1	10.8
Education	Elementary school	184	18.2	28.3
	Secondary school II	580	57.3	52.3
	Tertiary education	248	24.5	19.4
Household income/month	≤CHF 3,000	158	16.1	-
	CHF 3,001–6,000	544	55.3	-
	>CHF 6,000	282	28.7	-
Internet use	Yes	626	60.4	54.1
	No	411	39.6	45.9

(2014). In 2014, 1,037 people aged 65 and over were interviewed. The survey considered all language regions of Switzerland. The interview method was a computer-assisted telephone interview (CATI) supplemented by a paper-and-pencil survey of households without a telephone connection. A standardized questionnaire (Appendix of[10]) was used. A simple random sample of the permanent resident population of Switzerland aged 65 and over was used (from the representative database 'AZ-Direct'). There were no restrictions on any upper age limit, current Internet usage, nationality, or type of housing. The study included a good representation in the sample across all age groups over 65 years, with little underrepresentation from older age groups (*Table 1*).

This paper reports on a subset of findings from the main survey[10]. For statistical analyses, SPSS (version 21) was used. Mostly descriptive analysis was conducted. A logistic regression analysis (Wald test) was also conducted to determine factors predicting use of mobile Internet.

To clarify the differences of the (not exclusive) groups in the analysis the following definitions were used:
(i) Internet users (IU): People who use the Internet;
(ii) Stationary Internet users (SIU): People who use the Internet with a desktop computer;
(iii) Mobile Internet users (MIU): People who use the Internet on the go, mostly with a smartphone or tablet;
(iv) Mobile devices users (MDU): People who have a smartphone or tablet, but do not necessarily use the Internet with the device.

The main focus of this paper lies on the MIU users.

Results

Participant characteristics and the Internet (IU)

The total sample includes 1,037 cases (*Table 1*). The youngest person was 65, the oldest 100 years (mean for women was 74.6 and for men was 74.3 years). 47% of those interviewed were men and 53% were women. People without Swiss citizenship and people who no longer live in their own household are under-represented in the sample, as compared to the data from Swiss Federal Statistics. On the other hand, people with a higher education were somewhat over-represented.

Although the digital divide between the generations has decreased over the past few years, only 60% (55.7% when weighted according to age, education, and language region) of interviewed older adults were using the Internet (IU) in the autumn of 2014. Internet usage (IU) differs greatly between age groups. Only 12.9% of Internet users were found in the age group of people over 85 years. However, in the age group between 65 and 69 years, we found 79.3% of people were Internet users. A gender gap was present: men (56.1%) are more often Internet users than women (43.9%). 52.2% of the respondents who use the Internet use it daily. Resources like education, income, and health positively impact actual usage of the Internet. Additionally, recommendations from a person's social environment, an

affinity for technology, and a personal benefit assessment have a positive impact on Internet usage. In particular, security concerns and difficulties of use were mentioned as predominant reasons for the non-use of the Internet[10].

Smartphone and tablet (MDU)

In the present survey, 43% of respondents aged 65 and older own a computer at home. Between the age groups, a difference can be found: 34% of 65-69 year-olds have a computer in the household, but only 7% of those over 85 years old.

As described, in recent years, the mobile use of information and communication technologies has expanded and also became important for older persons. In the present study, 32% of respondents own a smartphone and 26% a tablet computer. 63% (52%) of older adults who own a smartphone (tablet), use it daily (*Table 2*). Between the age groups, a divide regarding the mobile devices use (MDU) was found. Smartphones were mostly owned by persons who already use the Internet; only 35 respondents who didn't use the Internet owned a smartphone.

The example of the smartphone illustrates that individuals who own a smartphone are more often 'younger' men, people with a high level of education, people with a high income, and people with a high general affinity for technology (*Table 2*).

Mobile Internet with smartphone or tablet (MIU)

For many older people, mobile Internet is still new, and only about one third of them own a mobile device. In the current study, older people who use the Internet in general (IU) were asked where they used the Internet. One of the possible answers was 'mobile/on the move via smartphone or tablet computer'. 34% of Internet users replied to that question in the affirmative.

Mobile Internet users (MIU) use mobile Internet for email, general information search, navigation, train connections search, and reading newspaper. Only a few use mobile Internet for online banking, multimedia content, online shopping, social networks, or other uses.

Based on the survey data, differences between the group of Internet users who also use mobile Internet (MIU) and the group of Internet users who do not use mobile Internet (SIU) were found (*Table 3*). The place of residence (as measured by number of inhabitants of the place of residence of the interviewed person) has no significant explanatory power on the question of whether someone uses mobile Internet or not (Cramér-V in Table 3). Persons in younger age groups are significantly more often users of mobile Internet than older persons. Men are slightly more likely than women to be mobile Internet users (MIU). People with a higher level of education or a higher income are more often mobile Internet users (MIU). Health is apparently a resource for the use of mobile Internet. Older people who use mobile Internet have greater technological affinity and were using a computer regularly before retirement. They have a more positive attitude toward the Internet in general compared to persons who do not use mobile Internet (*Table 3*).

Table 2. Characteristics of smartphone and tablet users (MDU); n=1037; percentages per column

Parameter	Scale	Smartphone user		Cramér-V (p)	Tablet user		Cramér-V (p)
		Yes (n=323)	No (n=683)		Yes (n=261)	No (n=754)	
Gender	Female	40.2	58.3	0.169 (0.000)	44.4	55.4	0.096 (0.002)
	Male	59.8	41.7		55.6	44.6	
Age, years	65-69	44.6	22.3	0.305 (0.000)	38.3	25.7	0.206 (0.000)
	70-74	31.9	25.2		34.1	25.6	
	75-79	15.2	22.0		16.1	21.1	
	80-84	5.9	16.4		8.8	14.5	
	85+	2.5	14.2		2.7	13.1	
Education	Elementary school	9.2	21.9	0.170 (0.000)	10.2	20.8	0.139 (0.000)
	Secondary school II	59.4	56.7		58.0	57.1	
	Tertiary education	31.4	21.3		31.8	22.1	
Household income/month	≤CHF 3,000	10.0	18.3	0.207 (0.000)	10.0	18.0	0.202 (0.000)
	CHF 3,001–6,000	48.4	59.4		46.2	58.6	
	>CHF 6,000	41.6	22.3		43.8	23.5	
Desktop computer	Yes	62.7	33.6	0.273 (0.000)	65.2	34.9	0.267 (0.000)
	No	37.3	66.4		34.8	65.1	
Technological affinity	Low	14.5	45.6	0.342 (0.000)	19.2	41.8	0.235 (0.000)
	Average	28.2	28.2		27.6	28.0	
	High	57.3	26.2		53.3	30.2	
Internet use (intensity)	Daily	63.0	-		52.3	-	
	Rarer	37.0	-		47.7	-	

Table 3. Characteristics of mobile Internet users (MIU); percentages per column; only persons who use the Internet (IU) were considered (n=626)

Parameter	Scale	Mobile Internet user		
		Yes (n=203)	No (n=423)	Cramér-V (p)
Location population size	≥5,000	33.0	34.8	
	5,001–50,000	54.2	49.4	0.050 (0.453)
	>50,000	12.8	15.8	
Gender	Female	35.5	48.0	0.118 (0.003)
	Male	64.5	52.0	
Age, years	65-69	50.2	34.3	
	70-74	31.5	32.4	
	75-79	13.3	18.9	0.189 (0.000)
	80-84	3.9	10.9	
	85+	1.0	3.5	
Education	Elementary school	5.1	12.3	
	Secondary school II	56.6	58.3	0.129 (0.006)
	Tertiary education	38.3	29.4	
Household income/month	≤CHF 3,000	8.7	10.3	
	CHF 3,001–6,000	37.8	57.0	0.202 (0.000)
	>CHF 6,000	53.6	32.7	
Subjective health	Low	1.5	5.1	
	Average	7.4	14.9	0.144 (0.002)
	High	91.1	80.0	
Technological affinity	Low	9.4	26.5	
	Average	25.1	33.4	0.255 (0.000)
	High	65.5	40.0	
Computer use before retirement	Not at all	5.9	19.6	
	Low	16.7	33.4	0.291 (0.000)
	High	77.3	47.0	
Attitude towards the Internet	Negative	6.9	22.0	
	Ambivalent	26.6	38.4	0.266 (0.000)
	Positive	66.5	39.6	
Non-mobile Internet use	Frequent use	73.9	41.8	
	Occasional use	21.2	35.7	0.313 (0.000)
	Rare use	4.9	22.5	

Mobile Internet users (MIU) mainly belong to the group of frequent users of the Internet. 73.9% of mobile Internet users (MIU) are frequent Internet users in general; 21.2% were occasional users, and only 4.9% rare users, but mobile non-users (SIU) are more often (22.5%) rare Internet users (*Table 3*). Consequently, many people use mobile and also the non-mobile Internet. The mobile usage complements the stationary use.

To answer the question of what factors influence mobile Internet use (MIU), a logistic regression was performed. The dependent variable is mobile Internet use (MIU vs. SIU). In this case, we were interested in the likelihood a person will be in the group of mobile Internet users (MIU) based on certain characteristics. Only persons who use the Internet were considered. The logistic regression analysis revealed an overall association between variables and mobile usage, $Chi^2(12)=130.847$, p=0.000, Nagelkerkes $R^2=0.281$ (*Table 4*).

Compared with participants who indicated not using mobile Internet (SIU), those who were mobile Internet users (MIU) were more likely to be younger, to have higher technologically affinity, and to have a positive attitude towards general Internet use, after controlling for other variables. People in very old age rarely use mobile Internet. Rather, the younger among the older persons and people with a high general affinity for technology and a positive attitude towards the Internet are more often mobile Internet users (MIU). None of the other predictor variables were significant at the 5 percent level (*Table 4*).

Usefulness of mobile Internet for everyday life

Most respondents who use the Internet (IU) view the Internet as a useful resource for their daily living. For example, 63% of Internet users (IU) and 73% of mobile Internet users (MIU) affirmed that the Internet saved them time. 53% of Internet users (IU) and 67% of mobile Internet users (MIU) affirmed: "The Internet allows me to stay independent for a longer period of time in old age". 93% of smartphone users agreed with the statement, "My smartphone gives me a sense of security on the road". Fewer people, but still a clear majority of smartphone users (77%), agreed with the statement, "My smartphone is my constant companion". 61% of smartphone users agreed with the statement, "With my smartphone, I can better organise my life". Smartphone use and therefore mobile Internet is perceived as a resource for coping with everyday life in old age.

Discussion

Mobile Internet (MIU) is becoming increasingly important, also for the older generation. Perhaps mobile use with smartphones or tablets is the future use of the Internet. However, there is still a digital gap between the generations and also between older people who use the Internet and the ones who do not[11–15]. Not every older person who adopts the Internet (IU) also adopts mobile Internet (MIU). The present data show that 34% of Internet users (IU) also use mobile Internet (MIU). One third of mobile Internet users (MIU)

Table 4. Logistic regression analysis (Wald test) predicting mobile use of the Internet; 0=no mobile use (SIU); 1=mobile use (MIU)); n=581; confidence limit 0.05; significant differences in bold type; OR=Odds Ratio; ref=reference category

Parameter	Scale	Wald	p	OR
Gender	Female (ref)			
	Male	3.512	0.061	1.515
Age, years	65-100	**24.652**	**0.000**	**0.898**
Education	Elementary school (ref)			
	Secondary school II	0.819	0.365	1.462
	Tertiary education	0.360	0.548	1.302
Household income/month	≤CHF 3,000 (ref)			
	CHF 3,001–6,000	3.226	0.072	0.518
	>CHF 6,000	0.868	0.352	1.406
Subjective health	Low (ref)			
	Average	0.390	0.532	1.605
	High	3.237	0.072	3.512
Technological affinity	Low (ref)			
	Average	1.788	0.181	1.562
	High	**14.190**	**0.000**	**3.348**
Attitude towards the Internet	Negative (ref)			
	Ambivalent	3.222	0.073	1.954
	Positive	**12.815**	**0.000**	**3.654**
Constant		4.491	0.034	41.515

is a lot, taking into account that older people are slower adopters of new technology than younger people (51% of the 14-44 year-olds in Switzerland use mobile Internet[7])[16–17].

Frequent users of non-mobile Internet (IU) usually use also mobile Internet (MIU); there is a complementary use. In particular the so-called 'early adopters'[17] of new technologies among the older population are mobile Internet users (MIU). The multivariate data analysis (*Table 4*) showed that, beside a younger age, technological affinity and general attitude towards the Internet are positively associated with the use of mobile Internet (MIU). Therefore, interest in new technologies and experienced usefulness seem to act as pull factors. However, further research is necessary to clarify why a large proportion of older Internet users (IU) do not yet adapt to mobile Internet (MIU).

More and more the smartphone will replace the conventional mobile phone, and perhaps in the future the tablet computer will replace the desktop computer in the households of older persons[5,10]. The use of smartphones and tablets requires agreement with the statement, "The use is useful and easy"; the well-known TAM (technology acceptance model)[18] stresses the importance of usefulness and ease of use, but it is often forgotten that today's older people do not want a special senior mobile phone that is age-friendly and easy to use; they want the same phone as their children, grandchildren, and the rest of those around them. Usefulness is increasingly more influenced by mobile apps than by the hardware itself.

To bring older adults to mobile Internet, it is therefore important not only to increase the ease of use but also to target the usefulness and to find arguments for this. An approach here – expressed by many mobile Internet users interviewed – is to highlight the relevance of smartphones for coping with everyday life.

Conclusion

The results of the current research can be used to identify ways to increase acceptance of smartphones and tablet computers among older people. Usability issues should be addressed through optimal design of hardware and software, with the focus being 'design for all'.

Today, mostly early adopters and those with high technological affinity among the older population use mobile Internet. It will be interesting to follow the further course of this adaptation. The present data from Switzerland can only show a short period of time, but it is clear that there will be a further increase in Internet use (mobile and non-mobile) among older people in the future. The digital gap will decrease, in the logic of period (technological evolution and requirements) and cohort effects (educational background and experience of later generations). However, we suggest that beside these effects factors like old age, individual education and benefit expectations will furthermore cause a digital gap in mobile Internet use. So further research with a longitudinal focus is required to examine which internal and external resources are relevant for mobile use and how smartphones and tablet computers can help to cope with age-related limitations.

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References

1. Mitzner TL, Boron JB, Fausset CB, Adams AE, Charness N, Czaja SJ, Dijkstra K, Fisk AD, Rogers WA, Sharit J. Older adults talk technology: Technology usage and attitudes. Computers in Human Behavior 2010;26(6):1710–1721; doi:10.1016/j.

chb.2010.06.020
2. Compaine BM. The digital divide: Facing a crisis or creating a myth? Cambridge: MIT Press; 2001
3. Warschauer M. Demystifying the digital divide. Scientific American 2003;289(2):42-47; doi:10.1038/scientificamerican0803-42
4. Korupp SE, Szydlik M. Causes and trends of the digital divide. European Sociological Review 2005;21(4):409-422; doi:10.1093/esr/jci030
5. Pew Research. Older Adults and Technology Use. Washington: Pew Research; 2014
6. Gerpott TJ, Thomas S. Empirical research on mobile Internet usage: A meta-analysis of the literature. Telecommunications Policy 2014;38(3):291-310; doi:10.1016/j.telpol.2013.10.003
7. Latzer M, Just N, Metreveli S, Saurwein F, Büchi M, Egi J. Internetverbreitung und digitale Bruchlinien in der Schweiz 2013. Zürich: Universität Zürich; 2013
8. Swiss Statistics. Informationsgesellschaft – Gesamtindikatoren. Haushalte und Bevölkerung – IKT-Ausstattung; 2015; www.bfs.admin.ch/bfs/portal/de/index/themen/16/04/key/approche_globale.indicator.30103.301.html?open=308; retrieved July 20, 2015
9. Pew Research. Cell Internet Use 2013. Washington: Pew Research; 2013
10. Seifert A, Schelling HR. Digitale Senioren. Nutzung von Informations- und Kommunikationstechnologien (IKT) durch Menschen ab 65 Jahren in der Schweiz [Digital seniors. Use of ICT by Swiss people over 65]. Zürich: Pro Senectute Schweiz; 2015
11. Loges WE, Jung JY. Exploring the digital divide Internet connectedness and age. Communication Research 2001;28(4):536–562; doi:10.1177/009365001028004007
12. Rice RE, Katz JE. Comparing Internet and mobile phone usage: digital divides of usage, adoption, and dropouts. Telecommunications Policy 2003;27(8):597–623; doi:10.1016/S0308-5961(03)00068-5
13. Lengsfeld JHB. An econometric analysis of the sociodemographic topology of the digital divide in Europe. The information society 2011;27(3):141–157; doi:10.1080/01972243.2011.566745
14. Olson KE, O' Brien MA, Rogers WA, Charness N. Diffusion of technology: Frequency of use for younger and older adults. Ageing international 2010;36(1):123–145; doi:10.1007/s12126-010-9077-9
15. Porter CE, Donthu N. Using the technology acceptance model to explain how attitudes determine Internet usage: The role of perceived access barriers and demographics. Journal of Business Research 2006;59(9):999–1007; doi:10.1016/j.jbusres.2006.06.003
16. Sackmann R, Winkler O. Technology generations revisited: The Internet generation. Gerontechnology 2013;11(4):493–503; doi:10.4017/gt.2013.11.4.002.00
17. Rogers EM. Diffusion of Innovations. New York: Free Press; 2003
18. Davis FD. Perceived usefulness, perceived ease of use, and user acceptance of information technology. MIS quarterly 1989;13(3):319–340; doi:10.2307/249008