

# Opinions and use of mobile information technology among older people in Northern Finland - Preliminary results of a population based study

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## ABSTRACT

Older people's usage of mobile devices is increasing. This study is part of the GASEL project and seeks to increase the understanding of the use of mobile information technology and opinions towards it. Opinions are compared between genders and age groups. The population based data were collected by conducting a questionnaire survey. A random sample of 1,500 adults 65 years of age or older was obtained from the Finnish Population Register Centre. The number of respondents was 918 with a response rate of 61.2 %. About one fifth (n=169) had used a tablet computer and

approximately one third (n=226) had used a mobile phone with a touch screen in the past 12 months without encountering major difficulties. The respondents had mostly thought that using the devices would not be easy. They had also thought that the usage would not be too expensive for them. Men and younger old people held more positive opinions towards these new technologies. Older people are slower in adapting and accepting new technologies and this should be taken into account when designing services, applications and content, as these technologies have the potential to enrich the lives of this specific population group.

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## Keywords

mobile information technology, smartphone, attitudes, aging, information society

## INTRODUCTION AND BACKGROUND

In Finland, 69 percent of people aged 65 to 74, and 31 percent of those aged 75 to 89, had used the Internet in the

past three months in 2015. For example, 19 percent of those aged 65 to 74 and five percent of 75 to 89-year-olds had used some form of social network service in a three-month period (Statistics Finland, 2015). Among Icelanders the frequency of information seeking among older people on the Internet increased from 2002 to 2012 (Pálsdóttir, 2015) and this has probably also been the tendency in other countries, including Finland. Generally speaking, the active use of information has been associated with successful aging (Asla, Williamson and Mills, 2006; Asla 2013; Niemelä *et al.*, 2012).

Mobile phones, smart phones and tablets (such as iPads) are becoming more popular all the time. In Finland a tablet was in use in 42 percent of all households in 2015. Respectively, 69 percent of Finns used a smartphone (Statistics Finland, 2015). Older people have often been slow to adopt new technologies, but also their usage of these wireless devices is increasing (Pew Research Center, 2014). As many services, ranging from healthcare to entertainment, go online, seniors also have opportunities to benefit from mobile applications.

However, not all older people are eager to adopt these new devices, or perceive a need for them. Barriers that can affect mobile device use in this population can relate to changes in individuals' sensory, motor or cognitive performance (Fletcher & Jensen, 2015). The aging process not only involves physical changes, but also psychological and social effects (Wrzus *et al.*, 2013). In the worst case scenario, this could lead to exclusion from society. For instance, Mervyn & Allen (2012) have investigated the influence of mobile information technology on reducing social exclusion. Furthermore, mobile information technologies can serve as a tool for disempowering or empowering older people. For instance, the findings of Hill, Betts & Gardner (2015) support evidence of a "grey" digital divide. The use of mobile information technology may allow older people to be more independent and to maintain their social networks, for instance, by keeping in contact with family and grandchildren (Kurniawan, 2008). Social media can also be a form of online information (Narayan *et al.*, 2013).

Psychological factors, such as individuals' beliefs about technology and the perception of need in determining the adoption of new technology have been highlighted in a number of theories, for instance, in the Diffusion of Innovations theory (Rogers 2003) and Theory of Acceptance and Use of Technology (UTAUT) (Venkatesh *et al.*, 2003). According to Fausset *et al.* (2013, 52), "Understanding older people's perceptions and use of technology is imperative in designing technology and creating successful user-technology interactions." However, studies on the opinions and use of mobile information technology among older people are still rare.

This study contributes to the research into the use of new technologies among older people and the opinions they hold

towards it. We present preliminary results of our study which is part of a larger project looking at gamified services for the elderly (the GASEL project).

The research questions were as follows:

- 1) Have older people used mobile information technology?
- 2) What kinds of opinions do older people have towards mobile information technology?
  - a) Are there differences in the opinions of older people towards the use of mobile information technology between the genders?
  - b) Are there differences between age groups (65-69 years old, 70-79 years old, 80 or older) in the opinions towards the use of mobile information technology?

## METHODS AND DATA COLLECTION

This study was part of a multidisciplinary, population based GASEL project, which was carried out in Finland from 2014 to 2016. In the project a gamified, tailored remote service concept for promoting the health and wellbeing of older people was designed. The study protocol of the project was approved by the Ethics Committee of Human Sciences at the University of Oulu (statement 6/2014).

The study population of the GASEL project consisted of a random sample of 1,500 older adults obtained from the Finnish Population Register Centre. The selected sample were aged 65 or more by the end of 2014, spoke Finnish as a native language, and had a permanent address in the Finnish city of Oulu. The participants received a paper questionnaire by mail at the beginning of November 2014. A reminder and another copy of the questionnaire were sent to the non-responders four weeks after this. Respondents were offered the opportunity to answer and return the questionnaire either online or on paper. The questionnaire included questions relating to their health status, physical activity, health information seeking behaviour, Internet use and gaming.

The total response rate was 61.2 % (n= 918). The mean age of the final study population was 73.4 (SD 6.8) years and 57.5% were females. The respondents and non-respondents did not differ according to gender (Pearson's  $\chi^2$  test  $p=0.418$ ) but there was a statistically significant difference regarding age because the mean age of the non-respondents was 74.9 and 73.4 for the respondents (Mann-Whitney U  $p=0.005$ ).

## Survey questions

This study focuses on older people's readiness to use mobile information technology. The questionnaire contained questions relating to the use of mobile devices and on opinions related to the use of these kinds of devices. Factors affecting the adoption of mobile technologies, such as smartphones or tablets included in the UTAUT

technology acceptance model (Venkatesh *et al.*, 2003) were used as a support in formulating the questions. The participants were asked whether in the last 12 months they had used a tablet computer, or a mobile phone with a touch screen, and whether they had ever used the Internet with a mobile phone. The response alternatives were: “Yes, and there were no major difficulties,” as well as, “Yes, but it was difficult to do,” in addition to, “No,” and, “I don’t know.”

The participants were instructed as follows: “Give your opinions on the following statements, which are related to the use of mobile information technology devices, such as smartphones or tablets.” The response alternatives were: “Yes,” and, “No,” as well as, “I don’t know.” The statements were as follows: a) “I am interested in using mobile information technologies”, b) “I believe that using mobile information technology is/would be useful in my daily life”, c) “I believe that using mobile information technology is/would be necessary in my daily life”, d) “Using mobile information technology is easy for me” and e) “Using mobile information technology is too expensive for me”.

#### Data analysis

The data were analysed using the software package SPSS (version 21 for Windows). Descriptive analyses were done using percentages for categorical variables.

The five statements relating to opinions on the use of mobile devices were further analysed by forming a sum variable from them. The sum variable reflected a positive opinion towards mobile information technology. For the sum variable the statements a)-d) were rated by giving one point for a “yes” response and zero points from other responses. Statement e) was treated differently by giving one point for a “no” response and zero for the others. The point scale was from 0 to 5 wherein 0 reflected the most negative and 5 the most positive opinion towards mobile information technology.

The sum variable was investigated in relation to gender and age. For statistical analysis, the respondents were divided into three age groups: 65-69 years, 70-79 years and 80 years or over. The statistical significance of the associations between the categorical explanatory and response variables were analysed using cross-tabulation with Pearson’s chi-squared test.

#### RESULTS

Over one fifth ( $p=169$ , 22.5 %) had used tablet computer in the last 12 months and had not had major difficulties. The percentage of the users of mobile phones with touch screen was higher as 29.4% ( $n=226$ ) had used them without major difficulties. One fifth ( $n=171$ , 20.8 %) had also used the Internet with a mobile phone. Only a few of those who responded “yes” to the questions had encountered difficulties in using mobile devices (see Table 1).

	Yes, and there were no major difficulties, N (%)	Yes, but it was difficult to do, N (%)	No, N (%)	I don't know, N (%)
Have you used a tablet computer in the last 12 months?	169 (22.5)	19 (2.5)	538 (71.6)	25 (3.3)
Have you used a mobile phone with a touch screen in the last 12 months?	226 (29.4)	12 (1.6)	485 (63.1)	46 (6)
Have you ever used the Internet with a mobile phone?	165 (20.1)	6 (0.7)	638 (77.6)	13 (1.6)

**Table 1. Usage of mobile information technology among older people.**

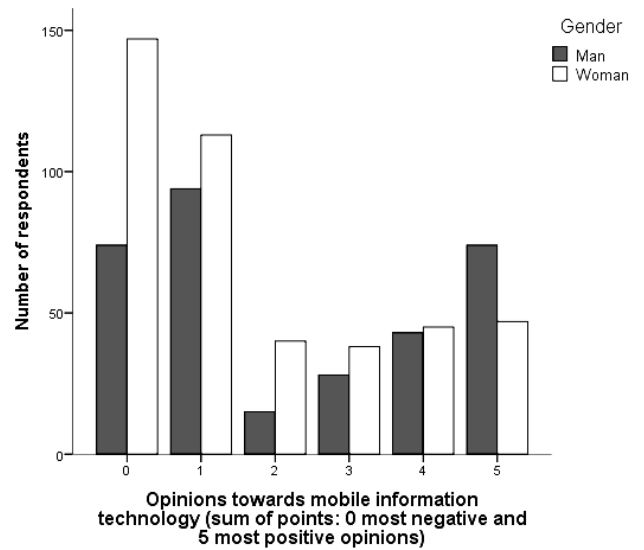
Opinions relating to the use of mobile information technology could roughly be divided into two categories, positive opinions and negative opinions. Of the respondents, 345 (42.9 %) were interested in using mobile information technology, 310 (39.5%) believed that using mobile devices is or would be useful, and 270 (34.3 %) felt that the usage of mobile technology was necessary for them in their daily lives. One fourth, ( $p=296$ , 26.2 %) thought that using mobile information technology was easy for them. However, 144 (18.8 %) felt that the use of this kind of technology was too expensive for them (see Table 2).

	Yes, N (%)	No, N (%)	I don't know, N (%)
I am interested in using mobile information technology	345 (42.9)	362 (45.0)	97 (12.1)
I believe that using mobile information technology is/would be useful in my daily life.	310 (39.5)	297 (37.9)	177 (22.6)
I believe that using mobile information technology is/would be necessary in my daily life.	270 (34.3)	329 (41.8)	188 (23.9)
Using mobile information technology is easy for me.	296 (26.2)	345 (43.9)	235 (29.9)
Using mobile information technology is too expensive for me.	144 (18.8)	412 (53.9)	209 (27.3)

**Table 2. Opinions towards mobile information technology among older people.**

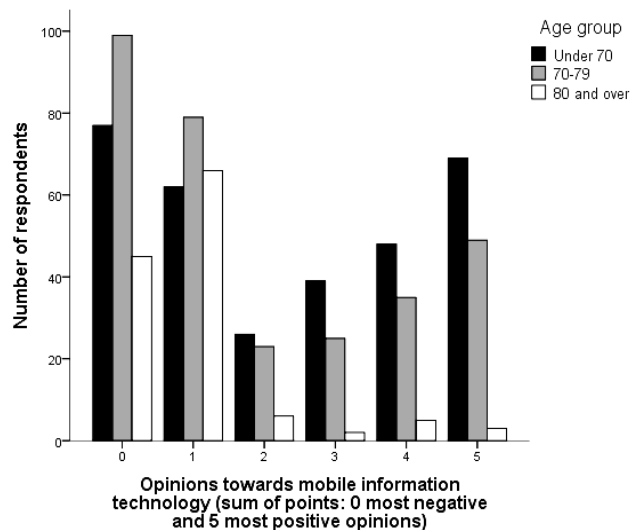
A sum variable was calculated from the statements relating to the opinions. This variable was then investigated in relation to gender and age.

Men were more positive in their opinions towards mobile information technology (Pearson's Chi square  $p < 0.001$ ). (See Figure 1).



**Figure 1. Opinions towards mobile information technology according to gender.**

From the study population 38.0 % were 65-69 years old, 41.5 % were 70-79 years old and 20.5 % were 80 or over. Those under 70 had most positive attitudes towards mobile information technology and those 80 years or over the most negative attitudes (Pearson's Chi square  $p < 0.001$ ) (See Figure 2).



**Figure 2. Opinions towards mobile information technology according to age.**

## DISCUSSION

This representative population-based survey study provides new information about older people's use of and opinions towards mobile information technology. Most of the older people in this study who had used tablets or smart phones had not encountered any major difficulties in their use. Opinions relating to the use of mobile information technology divided more or less into two categories; positive and negative. Furthermore, quite many of the respondents were unsure about the topics under examination. Men and those under 70 were the most positive in their opinions towards mobile information technology.

Studies on opinions and the use of new mobile information technology among older people are still rare, but generally speaking, older people may be slower in adaption and acceptance of new technologies. It is important to understand their perceptions and use of technology (Fausset *et al.*, 2013). When designing services, applications and content that is most beneficial when used on mobile devices it should be remembered that not all older people see the value of the use and some are not interested in these kinds of new technologies. However, the designers should also keep this population group in mind and tailor elderly-friendly services for them.

The work started at multidisciplinary GASEL-project will be continued from the viewpoint of Information Studies under the HIBA project (Taking Health Information Behaviour into Account: implications of a neglected element for successful implementation of consumer health technologies on older adults).

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