Mapping Elderly Citizen's Computer and ICT Use in a Small-sized Norwegian Municipality

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Abstract: In Norway, many citizens' services are exclusively or at least delivered online. They usually require sufficient knowledge to use information and communication technologies (ICT). As part of an Interreg IV European project focused on e-inclusion for elderly, this work presents a study to map computer and Internet use among the elderly. The study was carried out in a small municipality of 10 000 inhabitants in Southern Norway, of whom15% were 65-year-olds or older. 178 replies out of 500 were obtained. Results showed that 9 out of 10 had access to and frequently used a computer at home. However, there still was 1 out of 5 who did not make effective use of ICT. Importantly, half of the respondents reported to have learned how to use the Internet through attending specific courses and others through guidance from relatives or acquaintances. Answers about monitoring technologies were practically oriented towards considering that topics, such as security and privacy, could have a subordinate role if the technology was used for a good and fair purpose. This work provides an insight into the current access to and use of computer and Internet, which becomes useful to inform ICT use policies among elderly population.

1 INTRODUCTION

Information and communication technology (ICT) plays a significant role in people's lives, being a central part in a wide range of activities such as leisure and entertainment, communication and social interaction, health and wellbeing; being all of them contributing factors for an inclusive participation in the society. More types and number of tasks that a person daily carries out, related with work, bureaucracy or personal matters, are increasingly done online. This results in a substantial demand for digital skills from citizens to be able to fully participate and be integrated in their society.

Access to information is crucial for an independent living, without which it would be unfeasible to prevent social exclusion. In this context, the use of ICT is seen as a necessary precondition for participation in the community. This means that the access to more services, such as banking or public information, often relies on the use of ICT.

The importance of digital competence is recognized by the European Parliament and the European Council, identifying digital competence as one of eight key competences for all individuals in a knowledge-based society (EU, About our goals, 2014). According to EU, digital competence involves:

> […] *the confident and critical use of information society technology (IST) for work, leisure, learning and communication. It is underpinned by basic skills in ICT: the use of computers to retrieve, access, store, produce, present and exchange information, and to communicate and participate in collaborative networks via the Internet* (EU, Measuring Digital Skills across the EU, 2014, p. 3).

In 2013, 72% of EU population used the Internet weekly, whereas 62% used the Internet with a daily frequency. Among "disadvantaged people" (e.g., older people, low-educated or economically disadvantaged people), 57% used the Internet weekly. However, still 20% of them have never used the Internet (EU, Digital Agenda Scoreboard, 2014). According to the Europe 2020 initiative called Digital Agenda Europe (DAE), to increase ICT use is necessary to make a real difference in the future society. Hence, empowering citizen's digital competence is one of the prioritized initiatives in the Europe 2020 strategy (EU, About our goals, 2014). One of 13 specific goals to encapsulate this change

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is to increase the regular Internet usage among European citizens up to 75% and to decrease the population that has never used the Internet to 15% by 2015 (EU, About our goals, 2014). In this context, Norway is among the countries in Europe with the highest rate of inhabitants who use the Internet, with 93% using it regularly (EU, Digital Agenda Scoreboard, 2013). Although there is a relatively small proportion of the population who are completely inexperienced with the use of ICT, 17% of the population have little experience with the use of computers and the Internet and are placed in the category of "weak users" (VOX, 2011).

There is a clear correlation between age, education and digital literacy. Young people are more likely to use ICT than elderly people. Yet, at the same time, in the oldest group there also is a clear division between users and non-users, where people with higher education have higher digital literacy than those with low education (VOX, 2011). In this context, the conceptions as “digital divide”, “information haves” and “information have-nots” have often been used (Norris, 2001; Räsänen 2008).

For older people, the use of ICT can make a significant contribution to their quality of life and sense of empowerment by positively influencing their interpersonal interactions, promoting their cognitive functioning and contributing to their experience of control and independence (Shapira et al., 2007; Cotton et al., 2012). In addition, the use of ICT can help to establish or maintain social network despite health deterioration. However, there is evidence of barriers in ICT use for inexperienced users such as lack of interest, motivation or knowledge (Wagner et al., 2010).

The differences in the population about digital literacy represent a challenge in a society where the demand of ICT use is continuously growing. Therefore, it is essential that all age segments in the population have a sufficient digital literacy level to overcome the existing digital barriers that could potentially exclude them from the society. This insight will be important to find adequate measures to increase competence within disadvantaged groups, such as older people (VOX, 2011).

In order to implement adequate measures to strengthen the elderly’s use of ICT, it is necessary to have updated information about the elderly’s access to computers, their Internet habits and what motivates their use, or non-use, of ICT. However, although the proportion of users of ICT decreases with increasing age, it is noticeable that there are some elderly people who are still active users of the web and enjoy doing it. Input from this group about what motivates them can also provide valuable information on how ICT contributes to their lives.

The overall aim of this study was to get an insight into ICT use among elderly population, establish what the motivational factors for such use were, and specify their needs of increasing their digital competence. The study had the following research questions:

- To what extent are Norwegian elderly people users of computer and the Internet?
- What motivates their use/non-use of the Internet?
- In what areas are there needs for training?

1.1 Project Background

The background of this study is the Interreg IVB North Sea Region (NSR) project “iAge”, whose main aim is to promote e-inclusion among European areas in decline by promoting economic and social e-inclusion. In the “iAge” project, partners from 6 European countries of the NSR cooperate and work to transnationally develop new approaches in service delivery and economic restructuring through joint development of ICT innovation. This joint implementation to increase the use of ICT among the elderly population aims to keep them active and facilitating their participation in social and work life. The development of policies and strategies are built around the end-users as part of the inclusive approach.

"Grandma on the web" is the Norwegian subproject of the EU project "iAge". “Grandma on web” forms part of the “iAge’s” work package 4, whose aim is to improve the regional development through promoting use and accessibility of ICT in relation to lifelong living and to identify and evaluate educational strategies. It integrates an inter-municipal cooperation between local municipalities in the Southern region of Norway and the Centre of eHealth and Healthcare Technology at the University of Agder, also in Norway.

2 METHODS

2.1 Design

In this study, a sequential exploratory method was chosen using both quantitative and qualitative measures. A survey for mapping computer and internet usage was designed for people of 65-year-old or older. The questionnaire had 46 questions in

total, where 31 were of single answer, 12 of multiple answers and 3 open-ended answers. Specifically, the survey gathered information about elderly's computer and internet usage. Among other factors analysed were the reasons to get started, motivation for use, and the need for training. In addition, to get more in-depth knowledge about ICT use, 3 semi-structured focus group interviews with informants who had previously responded to the questionnaire were conducted.

2.2 Selection of Sample and Data Collection

The survey was distributed to a randomized and stratified sample (in relation to gender and age) of people over 65 years in a small municipality in Southern Norway. The municipality has approximate 10 000 inhabitants of whom 15% are over 65 years old. A total of 500 individuals received the questionnaire by ordinary mail. 178 people responded to the questionnaire, of which 60% were men and 40% women. About 45% were aged 65 to 69 years, while only 12% (22 people) were 80 years or older. Among the respondents, a relatively high percentage had higher education and good economic status. Over 80% lived with someone else. Only 15% were still employed. See Table 1.

In connection with the survey, participants got an open invitation to participate in focus group interviews conducted in the same municipality. 30 people provided their contact information and they were sent an invitation from the municipality with the date and time for the interview. 10 people finally participated, of whom six were male and four female; ages between 65 and 86. All of them had "some" or "a lot of experience" in ICT use. All participants signed informed consent before interviews started. The interview guide consisted of 13 open-ended questions, complemented by follow-up questions when necessary. All interviews were recorded and transcribed verbatim.

Table 1: Descriptions of the participants in the survey (N=178).

Sociodemographic variables		N (%)
Sex	Male	103 (59.9%)
No answer = 6	Female	69 (40.1%)
Age	64 – 69	77 (45.3%)
No answer = 25	70 - 79	54 (39.9%)
	80 and older	22 (12.4%)
Education	Low	83 (47.2%)
No answer = 6	High	93 (52.8%)
Economic situation	Low income	52 (29.8%)
	Medium income	65 (38.0%)
No answer = 9	High income	55 (32.2%)
Housing situation	Living alone	29 (17.2%)
No answer = 9	Living with someone	140 (82.8%)
Still working	Yes	26 (14.7%)
No answer = 1	No	151 (85.3%)

2.3 Data Analysis

Descriptive analyses of data from the survey were conducted using the statistical software package SPSS v19. The interviews were analysed and interpreted according to Kvale's (Kvale, 1997) three levels of understanding: "self-understanding", where the interpreter formulates what the participant understands to be the meaning of their understanding; "critical common sense", widening the frame of understanding and going beyond the previous participant's self-understanding; and "theoretical understanding", where the results are studied according to earlier research and actual theory (Kvale, 1997; Strand et al., 2009). This resulted in an analysis formed by three differentiated steps. In the first step, the researchers condensed the informants' statements in meaningful units. In the second step an initial, thematic framework was presented. In the third step, a theoretical discussion was conducted on the basis of the findings. Interpretations from steps one and two are presented in the results section, and the ones from step three in the discussion section.

2.4 Ethical Considerations

The responses of the survey were anonymous. Prior to each interview, all participants received written and oral information about the project. Each participant was informed about their data confidentiality, that participation was voluntary and that they had the right to withdraw at any time without a reason. According to the Norwegian regulations for ethical approval, the research project was not required to be registered with the Norwegian Research Ethics Committee (REK), but was authorized in compliance with the privacy protection of Norwegian Social Science Services (NSD), reference number 33519.

3 RESULTS

The information gathered in the survey and the focus

group interviews are presented together and categorized in four groups: Access and use of ICT, Attitudes towards use of ICT, Improvement of ICT-skills and How to facilitate ICT-use among elderly people.

3.1 Access and Use of ICT

3.1.1 Access

According to the answers of the survey, 160 people (91%) had access to a computer, 99% of them at home. 65% of those who had access to a computer have had the computer for more than ten years, while 14% had it for five years or less.

All participants in the focus group interviews had a computer at home.

3.1.2 Use

In the survey, 80% of the participants reported frequent computer use, with a weekly or daily frequency, while 20% of them used the computer either very infrequently or never. Those who reported that they used computers were asked to self-assess their competence in relation to others of same age. The majority believed that they were as good as others (60%), while 27% thought they were better and 13% said they were worse than others.

All 10 informants who participated in the focus group interviews were frequent users of computers and the Internet, most of them using it daily.

According to the survey, a majority of those who used the Internet regularly had extensive experience with using online banking, email, sending attachments, reading online newspapers, finding phone numbers and addresses, and finding factual information. There was more variation in experience in other activities such as creating email account, transferring pictures, booking tickets, writing, editing and organizing files. Very few had experience in installing programs, buying and selling goods over the internet, using social networking sites such as Facebook and Skype, genealogy, in using games and entertainment applications and watching movies or listening to music via the Internet.

The focus group informants admitted that the computer was used mainly for reading the news, seeking basic information on a search engine, writing or receiving mails or paying bills. Some of them were advanced users and searched out in specialized websites such as historical archives, genealogy and cultural news. Only a few informants had used health pages when searching for information about own or close family's illnesses. One participant told: *I was a bit obsessed with health topics and I had to go further and update my knowledge a little bit more*. A few stated that they were on the social network Facebook, but rather reading instead of posting information, while several said they were either not interested or that they were sceptical of using it: *I think that people should be more aware that what they write there, it stays there forever*. One of them actively used the video messaging software Skype. She said: *My best experience with it* [Skype] *is that it allows me to have contact with people in South America. It works great.* A few respondents had only seen the application Skype in action, but had not tried it on their own. Some of them had learned simple processing of images and purchases of goods and services.

The majority of survey respondents reported that they had learned to use the Internet through attending courses (50%). In addition, many had been trained through guidance from family, friends or colleagues (37%). 13% of the participants stated that they had self-learned its use. Among the 10 informants who participated in the focus group interviews, some had learned through work, some by attending courses, while others have learned by means of family or by trying out themselves: *I have had to learn on my own and with my grandchildren*.

17% of the respondents of the survey did not ever use ICT. Half of them had access to computer at home but other family members were the ones who used the computer. Among the non-users, about one third stated that they wanted to learn to use ICT.

3.1.3 Barriers

The respondents of the survey mentioned several barriers on the way to become better users of the ICT (questions with multiple answers). The most common reasons given were: no need for further training (23%), lack of interest (15%), the fact that there were other people doing it for them (14%) and that there was a poor offer of training courses in their neighbourhood (11%).

Several of the informants from the focus group interviews reported that they had had episodes of difficulty using computers. Some of them lost their work when the computer crashed: *We may have a tendency to press the buttons too much... especially my wife is terrible at pressing them too much and then they crash*. Others respondents had never had problems. When asked what they perceived as

problematic, one person answered that he found the terminology difficult to understand especially in the error messages, which contained difficult words and sentences: *But then there are those cases when you get some squares in the screen with some messages with many very strange and unfamiliar words*. The same problem appeared when they asked for help. Some of them said that there was a shift when they became older. When they were still working, there were always some colleagues available willing to help, but when they retired they could not find anybody available: *Now you sit there alone and you do not have anybody to communicate with*. Several respondents also experienced some problems associated with updates of systems or websites, making it difficult to adapt themselves to the new design and functionalities. *Suddenly, they change the home-page and then you have to wonder... and it is impossible to figure it out... because of some concept that should be more readable, but I feel that it is becoming less readable because of these new changes*.

Almost all the informants had children and grandchildren who lived nearby and could be asked for help: *I have a son who is a computer engineer so it is quite normal that he comes and fix things*. However, sometimes there is a downside: *The problem is that they do it so well but they cannot explain to me the way I should handle with it and do it in the same way as them*. Some of them also had partners that could help them, while some were self-learners. A woman stated: *I really believe in trial and error, it is my preferred learning method*. They also told that the local bank provided support when they had problems with online banking.

3.2 Attitudes towards Use of ICT

3.2.1 Motivation

The respondents of the survey were asked about the main motivation for starting using the Internet. The three main reasons given were: introduction to ICT at work or in education situations, ordering goods and planning trips, and need to get access to public services. Furthermore, they were asked about what was their main motivation to continue to use the Internet today. 80% of them answered that the main reason for using the Internet was that they believed that it was necessary to feel included in the society, while about 10% answered that social contact was an important motivator. The last 10% of them reported other different reasons. Both users and non-users of ICT were asked whether they agreed or disagreed with the statement "Using ICT is necessary to participate in the society". More than 80% of them agreed with the statement that it was necessary.

3.2.2 Impact on Life

When respondents of the survey were asked if the Internet affected their social life, answers where slightly more in favour of affecting their social life in a positive way (53%), while a little bit less of them said it had no effect (44%). Only 3% of them (four people) stated that the Internet affected their social life in a negative way. They were also asked whether using the Internet could affect their mental health. Most of them stated that it did not affect their mental health (72%), while 27% answered that the Internet influenced their mental health in a positive way. Only 2 people (1.5%) believed that the Internet influenced their mental health in a negative way.

Participants of the focus group interviews were asked about what was important for a good life and whether the use of ICT could contribute to it. In their answers, most of the respondents were primarily concentrated on being healthy, the opportunity to be active, having a good network and establishing and maintaining good relations with their relatives and friends. In addition, many of them mentioned the importance of having a good economy and having a good housing situation. Some also highlighted the opportunities of doing what they wanted and the pleasure derived from enjoying the nature, literature and music. All believed that different types of technology could contribute positively to a good life, i.e., use of the Internet makes it easier to find information about different possibilities and to contact people. A woman stated: *Internet contributes to improve quality of life by increasing my personal and academic network*. All believed that technological assistive devices make life easier for many people. In addition to discussing how technology could contribute to their lives, informants were also concerned about what they could do by themselves to have a better life. Several emphasised the importance of being active and socially engaged. For them it was essential to have something to do to not feel inactive. It was stated that technology could in a way contribute to both factors self-development and increased self-reliance: *You will find everything you need. You could not before the Internet came*.

The participants of the focus group interviews were presented with various technological solutions that could either contribute to social contact or

facilitate everyday life in different ways, exemplified by: communication (e.g., Skype), calendar/reminder, entertainment (i.e., games designed for elderly people), use of the Internet to order goods and services, sensor technology, Telehealth solutions and GPS tracking. All respondents unanimously felt very positive about the different types of technology presented, apart from gaming. About gaming, they thought that playing games was mostly for young people and therefore, at first, they believed that there was nothing useful in playing them. Several of them expressed concern about young people's gaming habits and therefore considered gaming as something negative. When they were presented with examples of games that are designed for elderly people, such as word games, crossword puzzles or those that encouraged physical activity, then some of the respondents felt more positive and accepted the idea of using that type of cognitively challenging games.

None of the interviewees showed scepticism with regard to monitoring in connection with the use of certain types of technology (i.e., different types of sensor technology and GPS tracking). They were more practically oriented and believed that if monitoring serves a good purpose, as for example in relation to safety and security, the privacy has then a subordinate role. Several of them stated: *It does not matter*. A man admitted: *It is very much a hysteria regarding monitoring*; and another said: *I would be very happy if I was demented and that someone put a GPS on me. I do not understand why some are so against it… then privacy should rather have a subordinate role*. Even though they were positive about the use of technology and technological developments, they were sceptical about specific things related to the use of technology: *I have been a bit sceptical to give my Social Security number when I order things online or travels*. Many were afraid that posted information might be misused, and found it difficult to know what information to trust. Many were also sceptical of computer use in general, underlining the negative impact of computing habits on adolescents' way of life. Some also highlighted that the Internet had the risk of making people physically inactive and thus contribute to isolation: *What can disappear is the social aspect, such as the fact of seeing on live a person with your eyes*. They emphasized that technology does not have to take away the social relationships between people: *By using the Internet you make cells for each individual… so that the old are sitting in each cell… and with the loneliness you get new diseases*. Some expressed scepticism to social media sites, such as Facebook, and they were concerned about the fact that many people, mostly young, are posting too much information online. Many also experienced the challenge to keep up to date with technology advances and admitted that they were scared by how fast technology is advancing and felt they were falling behind: *You cannot blink your eyes long before the technology has overtaken you, it goes so fast... you cannot follow it... you will be left behind sooner or later*. Another man said that he and his wife tried to follow: *We have created accounts in Facebook and also have purchased the iPhone and iPad so that we would not be left behind*.

The interviewees were also concerned that elderly people in general do not have enough ICT-use competences: *There are many who do not have internet because it is scary for them, they do not dare...* They believed that the Internet has a great place in society and therefore it is important that elderly people get sufficient training in order to be "e-included": *It has tremendous significance… the entire community would stop if the Internet is not working*. They expressed that they felt sorry for the oldest people who do not have the capacity to acquire the necessary knowledge, but also argued that today's society is in a transitional stage and that for future generations' use of technology will be more natural: *We are in a transitional phase... it will probably be more natural in the future*.

3.3 Improvement of ICT-skills

3.3.1 Need for Further Training

When the respondents were asked in the survey to what extent they needed to strengthen their skills in the use of ICT, approximately two thirds (71%) had some or considerable need to strengthen their skills, while a third had none or little need (29%). Genealogy and organizing and editing files were mentioned regarding requests for specific training topics. In addition, there were several respondents who wanted to learn how to use social media and entertainment applications. Both ICT-users and non-users were asked whether they would like to attend courses. 46% responded that they would consider it, 36% would not and slightly less than 20% were unsure.

Although most of the interviewees in the focus groups were frequent users of ICT, most of them had different needs for further training according to their interests. Some of them just wanted to be generally better and safer when using ICT, while others had more specific requests. Various suggested topics

were use of search engines, videoconference (e.g., Skype), image processing, genealogy and how to find and booking trips.

3.4 Facilitating ICT-use among Elderly People

3.4.1 Increase ICT-skills

To increase the digital ICT-skills of elderly population, several interviewees mentioned that the local municipality should be in charge of organizing different types of courses. However, the general opinion expressed was that by simply offering traditional courses the municipality would not reach out all those who were in most need to improve their skills: *There will always be somebody who remains outside, often those who are in greatest need*. One respondent suggested: *Maybe they could have some information and deliver it to all households. Not everybody reads newspapers and advertisements*. In addition, they made various suggestions about how the municipality could try to entice more people to attend courses, such as combining courses with a social event, lectures or food. One interviewee said: *I think one must connect it to the things that elderly people are interested in so that you can match it with your own interests*. Another suggestion was that the municipality could offer home tuition or assistance to those who cannot get physically out of their houses because of health problems by cooperating with voluntary organizations and schools. One interviewee highlighted the fact that municipalities should not have to give up educating their citizens because: […] *there is much to be gained for society by getting people online*.

When asked about what is the biggest obstacle to get people attending courses respondents answered that many elderly people feel useless: *The biggest obstacle is that they* [elderly people] *do not think they understand or master anything*, *you think you are too stupid*. However, some will not want to learn: *Many times it is excluding, and they will not listen and say that "it is not for me". Then it is difficult*. Therefore, it is important that the courses start at a sufficient low level so that everyone can acquire enough level of knowledge to be effectively e-included in the society. The possibility of having retired people as trainers was also suggested: *The municipality could engage their own elderly pensioners. There is so much knowledge among us that is wasted*. In addition, many interviewees were afraid that something wrong might happen with their computer. A woman admitted: *I recognize it from myself too. I was so nervous*. Another informant said: *It is important to create confidence to show people that this is not dangerous and that this is something they can benefit from*. Some also felt that the courses held in the municipality today are too expensive, what probably could discourage people from participating.

3.4.2 Increase Use of Assistive Technology

The interviewees believed that the local municipality had an important function informing their citizens about existing technology, for example, by creating demonstration rooms where different solutions can be shown: *If the municipality makes a demonstration room with different types of technology, I will come and have a look*. In addition, they suggested that home care professionals could be trained and possibly bring their own checklist and questionnaires to map people's needs for technological solutions at their homes.

4 DISCUSSION

The results from the study brought some important findings about the elderly population sample interviewed through the questionnaire and the focus groups sessions. About the RQ1 concerning the extension of ICT-use among elderly people, based on the sample analysed, Norwegian older people have a high percentage of Internet access. However, such access does not guarantee, firstly, the sufficient knowledge of how to use the technology; secondly, the awareness of the benefits of such use; and thirdly, the support available to increase the use, knowledge and self-confidence. For the RQ2 about motivation for ICT-use, several motivational factors have been encountered throughout the study consistent with the existing literature, e.g., the importance of being updated on "what is happening" in the community and of maintaining social contacts. Regarding RQ3 about training, inexperienced users were the first who needed ICT-use training and the acknowledgement of the benefits of such use; more experienced users needed more information and support about the possibilities of unfamiliar applications.

4.1 Access and Use of ICT

In the survey, 91% of the interviewees reported that they had access to a computer, consistent with the average rate for the Norwegian general population,

93% (SSB, Use of ICT in households, 2013). However, a national survey in Norway from 2011 showed that 1 in 4 people in the age segment group between 65 and 74 did not have Internet access at home. Among people between 75 and 79 years old, the proportion of people without the Internet access was 60% (SSB, Use of ICT in households, 2011). This means that there was a significantly greater number of participants in the survey who had access to computers and the Internet than in the general population. According to the national Norwegian survey, nearly half of those who did not have Internet access at home stated that they did not need it and around one third of the informants reported the lack of knowledge as the reason (Use of ICT in households, SSB 2011).

Figures from Statistics Norway show that, on average, just over 70% of people aged 75 and older has used a computer in the last three months in 2013 (Use of ICT in households, 2013). However, the figures do not distinguish between the reduced and extensive use. Yet, it may indicate that the informants in our study, where 80% of the respondents of the survey were frequent users, use the Internet more frequently than the average user in the same segment in the Norwegian population.

The findings are congruent with the position that Norway is among the developed countries with the highest ICT levels (EU, Measuring Digital skills across the EU, 2014). In the different household, ICT use and access rankings and in the ICT Development Index (IDI), Norway occupies a high position with around 93% of the population using Internet, and being one of the first countries to offer Long Term Evolution (LTE) wireless technology (ITU, 2013).

According to the survey, most respondents used the Internet for activities such as online banking, email, sending attachments, reading online newspapers, finding phone numbers and addresses, and finding factual information. This is in accordance with the national survey (SSB, Activities conducted on the Internet in the last 3 months, 2013), where activities such as email, reading the news online and net banking are the most common activities across all age groups. Our findings are also consistent with reviews reporting that older adults most commonly use the Internet for communication and social support, leisure and entertainment, productivity and searching for information (Wagner et al., 2010; Kim, 2008). However, results from both the survey and the interviews show that relatively few interviewees were advanced Internet users. That means that most elderly people of the sample are still "cautious users", who have a relatively limited range of ICT activities to perform. Despite older adults perform similar activities as other younger users with technology, they tend to not to fully explore and use the advantages that unfamiliar advanced tools offer online (Wagner et al. 2010). There is great potential to give older adults an insight into further possibilities for using ICT. If older adults have a positive perception of usefulness, ease of use and efficacy of the Internet, they will likely use it more often (Adams et al., 2005). Additionally, few interviewees used social media such as Facebook. Social media is now largely common among adolescents, but it is not particularly utilized among the elderly. According to national statistics (SSB, Use of ICT in households, 2011), about 90% of people under the age of 35 have participated in social networking sites in the last three months, compared with 13% in the 65-74 years age group. Use of social media is in many ways a positive contribution to the social community and to elderly people, who can contact their children and grandchildren, and also keep in touch with old and new acquaintances (Cotton, 2009). Therefore, it is important to inform this age group of the potential ICT uses of these media' and to stimulate their increased use among them. In this line, the use of videoconference software (e.g., Skype) can support contact despite large distances. However, interviewees also expressed a general scepticism towards the technology itself, being afraid of how the use of technology would contribute to social isolation rather than strengthening social relationships. Herein lies much of the technology's duality; it represents both an opportunity to strengthen social and independent lives, but it also may contribute to the contrary; social isolation and inactivity.

According to the survey, the main barriers to increase ICT skills were the lack of interest, having other people doing the tasks for them, such as partners, and the absence of need for learning new things (especially mentioned by those self-rated as experienced users). According to other research, common reasons for not using computers were: constrained learning opportunities, time availability, and a feeling that computer use is generally too complicated (Kim, 2008). Lack of perceived benefit, motivations and knowledge have been also previously reported as common reasons (Wagner, 2010).

There was a relatively greater number of men than women who responded to our survey. This can be explained by the fact that men are more active

users of computers and the Internet than women (SSB, Statistics Norway, 2014). Especially those women who do not have the necessary ICT skills and generally live longer than men, will find it difficult to access services in the future if they have to manage it on their own. Many of the women of the generation interviewed had often had little connection to the labour market and had often had a partner who dealt with house economy. These women are especially vulnerable to be marginalized. Therefore, it is important to provide training specifically aimed at older women (Lorenzen, 2008). Another important barrier to the use of ICT was the experience of low usability. In addition, informants also reported that the terminology was in many cases difficult to understand, e.g., error messages, and that the frequent software updates resulted in unexpected layout changes and increased frustration. Reported limitations concerning trying out new things were an existing fear of making mistakes, low self-efficacy and high level of personal anxiety among older adults (Czaja et al., 2006). In addition, age-related declining levels of spatial ability and mental model accuracy has been shown to have an impact on ICT performance as well as more general objective and individual age changes as low vision, psychomotor coordination, attention span and memory (Wagner et al. 2014). It is important to pay attention to elderly people's needs when designing and updating ICT systems, especially for aspects such as navigation, recognition of elements and predictability of their functionality. ICT training must take into account that older users require longer time to learn and more repetitions when compared with younger or more experienced users. A series of important goals must include the increase of older adult's computer self-efficacy, the emphasis of the benefits of the system and the creation of motivation for use. Also support personnel should be trained to highlight these critical points (Wagner et al., 2010).

4.2 Attitudes to ICT

Users and non-users stated that it was necessary to use ICT to participate in the society. They believed that ICT was important to monitor what is happening and to maintain social contact. Active users expressed that the Internet is a positive contribution to their lives, both socially and mentally. These are important aspects of Internet use that should be effectively conveyed to non-users. When properly used, the Internet can be an important factor to prevent loneliness and inactivity, contributing to self-control and independence (Sum et al, 2008).

All interviewees were very positive about the technologies presented to them, including various services of the Internet and types of welfare technology. Interviewees were aware that many people were overly sceptical when talking about surveillance technologies. However, respondents had a pragmatic approach primarily focused on the practical benefits of using technology. This positive attitude stands out in contrast to stereotypes that suggest that older adults are unable, unwilling or afraid to use tracking technology. However, at the same time interviewees expressed some scepticism related to technology use in other areas, i.e., posting too much information on the internet, buying and selling goods over the Internet and about the security of Internet banking. This is in line with a study reporting that although older adults were positive about technology, they were, at the same time, concerned about identity theft and loss of human contact (Fausset et al., 2013).

4.3 Facilitating ICT Use

Half of the participants expressed their desire of attending the courses. In addition, many of the interviewees with some technology experience acknowledged the need for further training. This shows that there is a great potential to increase ICT skills in the elderly by offering didactical technology courses, designed and implemented in conjunction with the municipalities. However, it is a challenge to get municipalities to offer courses for a growing group of older people who eventually have some ICT skills and are ready for further skills development. It is important that these groups have access to adequate levels of provision embracing their interests. These groups of elderly people would need to have the opportunity to become more experienced users so that they can effectively fully use the potential that ICT provides. It is especially relevant to develop ICT skills that help to increase their autonomy and their social network.

The background for the EU's digitization strategy is to make important community functions available for all residents. Therefore, when designing ICT courses, there should be a stronger focus on raising awareness among elderly people. The use of ICT can positively contribute to social participation and self-efficacy. This means that a strong focus should be implemented on the possibilities of using social media and finding relevant and high-quality health and other relevant public information. According to Mitzner et al.

(2010), older adults perceived a positive outcome of the use of technology when it is adopted. In this line, Campbell (2008) describes how training in ICT strengthens older people's ability to play an active role in their health care, and has a positive effect on their life styles.

The informants were also concerned about groups of older people who are particularly hard to reach by traditional courses, due to their lack of interest and self-confidence. Therefore, municipalities should be creative in terms of recruitment, information and dissemination of ICT-use knowledge, e.g., in collaboration with volunteers. For instance, the youth could help as "door-openers" for the dissemination of the advantages of ICT use by teaching the basics to elderly people without ICT experience (Thygesen et al. 2014). ICT courses for older adult learners should emphasize social contact and commitment (Leen and Lang, 2013), because social motivational factors are important to older adult learners.

4.4 Limitations of the Study

Despite the fact that the survey was distributed among a randomized and stratified sample (in relation to gender and age) of people over 64 years in a small municipality in Southern Norway, there were a relatively greater number of men than women (60% vs 40%) who responded to our survey, and, therefore, it is suggested that, based on the sample, men are more active users of computers and the Internet than women. This skewed distribution could have had an influence on the results. However, among the Norwegian population, there are slightly more men than women in the age groups between 65-84 years old, coincidentally the same age groups with the highest response rate in the survey (see Table 2). However, this does not completely explain the large predominance of men who responded to the questionnaire. The conclusion is therefore that part of the difference in the response rate may be explained by the fact that men are more active users of ICT than women and more likely to respond to the survey.

Table 2: Percentages of male respondents to the survey (N=178) compared to the population gender distribution in Norway.

Age group	Survey	Total population
65-79	63%	52%
80+	36%	39%

5 CONCLUSIONS

This work studied the computer and Internet use among elderly citizens from a small-size Southern Norwegian municipality using a questionnaire and three focus groups. The main topics covered by the questionnaire were Access and Use of ICT, Attitudes towards Use of ICT, Skill Improvement and Facilitation of ICT-use among the elderly. A series of three focus groups were created after collecting questionnaire's answers to delve deeper in the data and give a detailed overview.

The majority of the interviewees had and frequently used a computer at home. However, still a considerable amount of elderly people did not use ICT. One of the findings was that approximately half of the respondents had learned how to use ICT through the attendance of a specific course in the matter. Many others did learn through the effective help of their relatives and friends. The most common tasks done online were those that provide useful information with little effort, such as reading the news, seeking basic information on a search engine or communicating via email. Other complex tasks such as buying goods, installing programs, or streaming music were perceived as more sophisticated and only achieved by very few. Social networks had a relatively small use, mainly used for reading what others posted rather than posting themselves. There was a problem with the trust of the information source in social network websites and a general concern with the potential misuse of the personal posted information.

Another finding was about monitoring technologies, which, when compliant with safety and privacy regulations, were satisfactorily accepted. In terms of institutional responsibility, the local municipalities were attributed a key role in informing their citizens about the existing technological solutions. It was suggested that having a demonstration room in a municipality building nearby would facilitate the approach and learning of new technologies. This building could bring the opportunity of having a training centre which would offer courses at all levels of proficiency combined with social events, lectures or food.

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