

# Digital Technology in the Contemporary Lives of Senior Citizens

P. Vacek and Rybenská K.

**Abstract**—While current seniors citizens sometimes use modern devices, we can't say that they use them as often and in the same way as young people. There is also a large number of seniors citizens who are not educated in using modern devices at all and those who do use them in a very different way compared to their younger counterparts. The aim of the research is to compare three groups of senior citizens which come from different backgrounds, find out what are their reasons for using modern devices and why are they important to them. Our current experience suggests rather significant differences in using modern technologies between those groups of senior citizens.

**Index Terms**—Senior citizens, modern technologies, modern devices, education, information and communication technologies.

## I. INTRODUCTION

In the same way that modern technology has become part of the lives of children and young people it is being used by senior citizens and people of an older age as well. Although the frequency of use and the efficiency with which they use it is still not on a par with young people, even at that they can still benefit from the technology and it is a part of their lives. Senior citizens often have a strained relationship with technology because neither the hardware nor the software was designed in a way to accommodate their needs. For many, notions such as using various digital technologies, tablets and smart phones seem rather strange and they cannot see anything positive that such technology could bring to their lives [1]. Senior citizens most often use the computer (laptops) for internet access but right now it is not the exception so much any longer that they own a mobile phone, a smart phone or even a tablet. Admittedly it is rare, but there are also those who own a smart band or smart watch (and it need not be a special smart watch which can predict when a fall may occur, whether the user took his medication, whether he/she needs assistance and so on [2]). Nevertheless, at the current time there is still a large number of senior citizens who do not interact at all with digital technology. It goes without saying that there are exceptions - that is, senior citizens who couldn't imagine life without technology - however those individuals fall into a separate category.

The aim of this research is to compare different groups of senior citizens with each other. The first group has contact

with their children and grandchildren and have continuous access to modern technology whether it be their own or shared. Thanks to their family being close by these senior citizens have motivation to use the technology because they are exposed to it every day. Sometime though they do become frustrated because they cannot enjoy the pleasures of everything which their children and grandchildren can with the technology. Often they can have encounters in which they cannot fully explain what the technology actually is or how to operate it. These senior citizens need not worry about the technology but nonetheless they are still coming across it.

The second category are the senior citizens who live alone and often use modern technology in the context of maintaining contact with their family who either live faraway or who don't have time to spend with them. These senior citizens have a natural interest in technology because they see its useful potential. Often they attend courses or even by themselves they learn to work with computers, tablets and internet. Often they may have poorly learned methods and may not understand the principles of working with computers but still, with the tools they have, they know how to send emails or call their loved ones using Skype.

The third category are senior citizens who live in Nursing Homes (or other care facilities), or live alone, almost without any contact with family or friends. The majority of these senior citizens don't know how to work with technology and neither do they have any interest in doing so. Hence we will focus on the first two categories more. The dividing of our research will centre around the following issues:

*Which category of senior citizens uses modern technology the most?*

*To what purposes is modern technology used by senior citizens and for what reasons?*

*What difficulties do senior citizens encounter when they want to work with modern technology (smartphone, tablet)?*

*How do they most often go about solving these problems?*

*What is the background of the senior citizens who are most likely to use technology in their daily lives and perceive it as useful?*

*Do the senior citizens learn to work with modern technology by themselves or rather by attending a course (or be lectured by someone in their family)?*

By means of interviews and observations these questions and sub-questions pertaining to the ways of using modern technology were answered by senior citizens. The research methods used are the method of dialogue, case studies and observation. Smartphones and tablets were the main modern technologies considered.

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## II. SENIOR CITIZENS AND MODERN TECHNOLOGY

The current new technologies can help to play an important role in assisting older people to participate in society. There are a number of valuable benefits that technology can bring to senior citizens. Among the most remarkable are:

- Online purchases (a wider selection on the internet, the chance to buy from the comfort of one's own home, better prices than in stores).
- A wide range of interesting information available online and free of charge.
- Electronic messages (the possibility to have the latest, free news).
- Social services (to keep in touch with family, friends).
- Email (quick and simple way to send a message to anyone).
- Skype (the possibility to call to anyone around the world and thereby socialize, free of charge).

Overall the internet can assist senior citizens to achieve new skills by providing a huge number of services [3].

The above mentioned services are by no means the only ones. Senior citizens using modern technology can find amusement and enjoyment and a certain social status (in many cases the senior citizens mentioned the satisfaction it gave them to be able to refer to the current digital world and speak of devices they have when around young people, children and grandchildren. Furthermore, the knowledge of how to work with modern technology helps them to reduce their isolation (senior citizens can communicate with anyone over the internet) thereby maintaining their mental faculties) and indeed it also allows senior citizens to monitor their own health (and in real time too) by means of, for example, a smart band [4]. Naturally the technology cannot replace human contact but it can be an effective means to facilitate it. According to research [5] the use of tablets can have many positive impacts on the lives of senior citizens. They can listen to music, browse photos, read, learn languages and so on. Additionally, tablets, in comparison to laptops and computers, are small and light. The touch screen is easy to use and the font size can be adjusted to suit oneself. Even games, which many people may frown at, can help senior citizens to remain alert and sharpen their mental skills, their cognition and their physical health (for example by using devices such as the Nintendo Wii. Games can also bolster human interaction during online gaming [5]. There is a hearing aid available which uses GPS to determine where the user is and to adjust the volume accordingly and there is technology which, through its sensors, can alert the senior person to stop moving around his apartment. Yet older people often have no idea of the existence of these modern achievements. They would rather be learning to use the technologies that young people accept as commonplace. Nevertheless, older people will often not give up or surrender and with the help of patient people they can certainly find an interest in modern technology and even buy a smartphone or a tablet. But naturally, they will not do this without the support or professional help on how to work with this modern technology [6].

It needs to be said however that often older people do not

have anybody who is there to teach them these new skills. Senior citizens also face many obstacles in adapting to the new technologies, such as various health problems or distrust to the usefulness they can have [7]. And last but not least most old people say that they need help to work with new technology. A very small number can say that they are able to learn by themselves how to work with a smartphone or a computer. There's still a huge digital divide between the elderly and young people which needs to be seriously addressed. Many older people may use computers, laptops and the internet but the use of smartphones and tablets by the elderly is still minimal [4].

Indeed, it is most common with old people that not all of these devices are familiar to them in any kind of detail. These barriers though can be overcome by educating themselves further. Hence there is a wide range of courses provided by universities or other educational institutions for teaching the senior citizens or helping them to self-study. Yet many of the opportunities are inadequate and the elderly may not have the opportunity to adapt and fit in. Nevertheless, it is certain that nowadays the use of modern technologies and the internet is so important as it provides them with access to everyday events. Especially the elderly, whose mobility may be compromised and restricted, will welcome such a development and this digital connection to the world [8]. We can also state that many of those senior citizens who started using the internet for example can now hardly imagine their lives without this digital technology which has become such an integral part of their daily lives [9].

But why therefore do so many senior citizens for whom modern technology would be an asset still not use it? The answer to this isn't an easy one to give. For this there are many reasons. One of them is the fact that many senior citizens are unable to clearly imagine of what use the modern technology, like tablets, would be to them. Nor indeed the internet or a computer. Many senior citizens do not need this technical ability in their everyday lives. The answer to this question may also lie elsewhere. For example, in the technical industry or wherever computers and other modern devices are used daily it is the young people who are most often in charge of operating them. For this reason, the target audience of such technology is the younger people and the elderly are basically forgotten. However according to current projections by 2030 about 19% of the American population will be over 65 years old [10]. In the Czech Republic in 2035 the number of people over 65 will be 24.5%. Hence we can see that the population is ageing and it is not appropriate to ignore the needs of this age group. Conversely, it is necessary to learn new techniques to help them in the area of mental health and good lifestyle. The ageing process is different for everyone and the human body is going through major changes. In spite of the natural decline in the health of senior citizens they are often much more content and able to appreciate what they have more than younger people can. However, ageing does inevitably make various activities harder and this includes learning new skills and the possibility of using modern technologies. Therefore, when teaching senior citizens, it is important to keep in mind that when it comes to modern technology they will perceive things differently than the young, healthy person will. For

senior citizens it is often difficult to read small text, hence it is good to increase the font size on their computer, smartphone or tablet. Also in the classroom it is crucial that the elderly person can hear what is going on well. We must remember that their hearing may not be as sound as it used to and that they need to hear every word the teacher or lecturer says. Ageing can also bring reduced motor activity and the elderly person may complain about the layout of his computer and how his hand cannot move the mouse comfortably. On the contrary the tablet or touchpad on your laptop can be operated relatively naturally [10]. Some senior citizens however, despite these inconveniences, still have no fear when it comes to trying out new technologies. And especially when they see clearly the advantages in using them. Here we quote the answer of one our respondent who participated in our research. Asked about why he used a tablet he said " *I prefer a tablet over a smartphone, it has a bigger screen and it is better for me to work with. If the tablet can make calls and send text messages, which mine can't, then I'd throw away the phone*". Male, 77 years, university educated.

The main features that older users engage themselves with are those that allow them to remain in regular contact with friends and family. The technology is primarily used by them therefore as a means of social contact [11]. The most common use for their computer is to receive and send emails, looking up information or reading the [12].

### III. THE RESULTS OF THE RESEARCH

According to surveys of the portal Senior Circuit elderly people lag behind the young generation in regards of the reception and especially the use of modern technologies. Based on these findings, the elderly can be divided into two basic groups. The first one contains the younger age groups of senior citizens (around 60-65 years), in which most of them have a higher education or are a little better off. These senior citizens are far more technologically equipped and they get more out of modern technology because they also have more positive attitudes towards the various advantages that the modern digital world brings them. This group often uses not only the many devices of modern technology, but also the internet. The second group in this research included older and poorer senior citizens. These people are also characterized by suffering from considerable health problems. Most of them did not use modern technology at all or only minimally. They are also more cautious of all the new developments that the digital world brings. Moreover, according to this research these senior citizens need help with advanced technologies in both the basics and the advanced work with the internet. Some even want to learn working with social networks [13].

The research that we conducted supports the above claims, perhaps with the exception of social networks. The respondents of our survey generally did not show much interest in them. Also, we noted that in our research we represented both wealthy senior citizens and poorer senior citizens of varying ages, and senior citizens with better salary and conditions such as having a university-level education. Our sample also contained the elderly who were younger (around 60-65 years).

We can conclude from our research that that senior citizens use advanced technology less than those who aren't senior citizens. Of the respondents which were interviewed only 18% are using tablets. Furthermore, 27% of respondents use tablets several times a year (usually borrowed from children or grandchildren), the remaining 55% of respondents aren't using tablets at all. Why this is so may be explained by one of the these testimonies: .. *"The most important thing for me is to learn the basics of computing, which I still haven't mastered. If I master the basics and can manage to not forget it I might start getting familiar with a tablet or a smartphone. The biggest benefit that I see is the internet and the possibility to obtain information rapidly. To do this you just need to have a computer at home,"* Male, university educated, 75 years.

The most common modern technology that senior citizens use for internet purposes is undeniably a personal computer. However, if we focus on a specific technology then the device most used by senior citizens are tablets (22%) and slightly less smartphones (17%). Another used device are laptop computers or other pieces of technology (eg hearing aid). We believe that the more frequent use of tablets is for the reason that they are able to provide easier readability due to a larger screen and also ease of working with them. A testimony about it is illustrated by one of the respondents: " *A Smartphone is a possibility for me to have all the necessary information which is available but it has a very small screen. The tablet is better, because I can handle it more easily. Sadly, I cannot make phone calls with it.*" Lady, 77 years old, university educated.

Most often, these senior citizens use advanced technology to browse the internet and search for information (such as the departure of the bus, use the navigation etc.) and some of the senior citizens have also tried writing an e-mail on the tablet. Of course smartphones are most often used to make phone calls and for the writing of SMS messages while some of them are used also for taking photos and videos.

A frequent problem senior citizens face when they learn to work with modern technologies are memory problems. Many of the elderly complain that they only learn new steps to work with technology with great difficulties and that it takes them so long for the individual steps to be remembered. Because of that, they need to be taught the same steps over and over. Some of the senior citizens also said that they fear the new technologies a bit because, for example, they can't learn to work with them: " *I have a tablet I received from my daughter's family on Christmas. Especially children awaited my great joy, and I could not very well hide big disappointment because I was afraid to touch the system. So far I have just learned to shoot the first image I had 13 times in a row (pressing the shoot button too many times unconsciously, author's note) and until today I almost always manage to make just one. I have a tablet and a smartphone but I am still afraid of it and my kids think I am crazy.*" Lady, 77 years old, high school educated.

Other problems reported are problems with reading (difficulties with reading the screen, mainly on a smartphone), feeling of uneasiness when touching the touch screen (often fail to press the right button, some respondents stated that moving to the touch the system still gives them big

problems).

If senior citizens decide to learn to work with modern technologies, most of them study in courses (73%) or learn from their children (19%). Many of the senior citizens are also learning to work with the technologies by themselves, such as reading manuals (8%). Senior citizens also reported that they often talked about technology among friends. Often they are eager to they meet with those who have a similar view of technology and who understand them better. One of the respondents says: *"I was looking forward to a new phone (smartphone, Ed. Authors), I had the opportunity to buy it after trying it a few times thanks to my friends that already had one. Touchscreen sometimes makes angry when writing messages (because of typos), sometimes it is hard to read what is written there, but I would never return to using the cell phone with buttons."* Female, 66 years old, high school educated.

New possibilities that modern technology brings to the lives of senior citizens is something that the senior citizens strongly perceive. Opinion about modern technology differed greatly in relation to levels of education or age. Modern technology in most cases induced rather positive feedback, but only if it is the case of the elderly who are interested in learning new skills. The least positive responses in these groups are such that some of the respondents are still not sure about the usefulness of a tablet or a smartphone: *"So far my tablet has brought me only small benefits. In fact, even the new mobile phones (smartphones, note. Authors) are still quite useless. Everything they offer I can do on a computer or on the Internet too, and I can call people from the old phone. Moreover, it will remain charged longer."* Man, 74 years old, university educated.

Following two figures represent issues and experiences of senior citizens belonging to the first group. These people are active users of modern technologies and have plenty of experience. The list of the most suffered difficulties by senior citizens is summarized in Fig. 1.

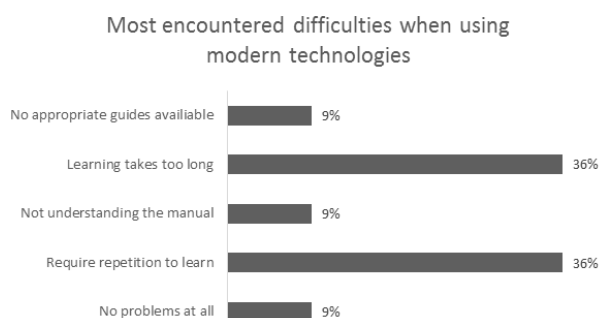


Fig. 1. Most encountered difficulties when using modern technologies.

Most experienced difficulties are the need to repeat learned methods many times in order to memorize them well and the problem that learning new functions takes too long. When they view learned features as important they can learn fast and remember their classes well. Examples of such cases are learning to work with e-mails and searching for information on the internet, as is summarized in Fig. 2.

At the beginning, we set three categories of older people in order to differentiate the respondents. The first group represents senior citizens who have constant contact with children or grandchildren, and who have constant access to

modern technologies. These senior citizens are often highly motivated due to their family connections. On the other hand, there are also those who are afraid of technology, because it is perceived as something difficult to handle and unmanageable. Some interviewees among these senior citizens basically thought nothing of what strengths technology can bring to their life, but simply accepted it anyway. One of the older women, said: *"By using modern technology I better understand the younger generation, and I am learning something new. I am pleased that I can talk about it with them and we have a common topic of discussion."* Lady, 71 years old, university educated.

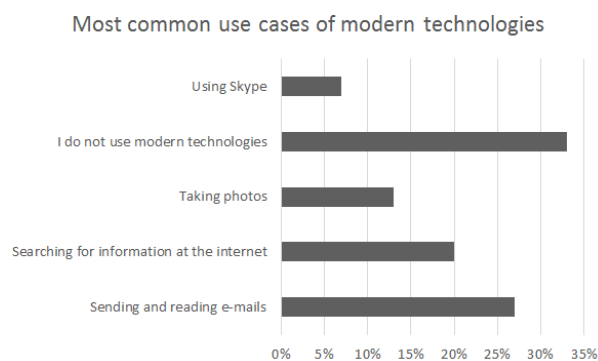


Fig. 2. Most common use cases of modern technologies.

The second category included were senior citizens who live alone and who mainly use modern technology for keeping in touch with their loved ones. For these senior citizens there is a clear interest in learning how to use technology as much as possible, whether in terms of contact or because they enjoy keeping up with the times and learning something new: *"I live in the 21st century and must adapt and not stand aside. I have to be self-sufficient and informed. 12 years ago I bought an Olympus digital camera, now I own another camera of a different brand and I didn't avoid buying a computer (my current is a third one) or software for processing photos. In the future I am also planning buying a tablet and a smartphone. We must not stop learning just because of our age."* Female, 73 years old, university education.

These two categories are complementary to each other. We can say that the level of education or conditions where these senior citizens come from does not significantly affect their appetite to learn to work with tablets or smartphones.

The third category, however, is completely different. These senior citizens are usually much older (75 or 80 and older age) than those we have previously examined. They live in nursing homes or similar institutions, or on their own without contact with family and friends. Many of them are not interested in modern technology in the first place their reason for it is most commonly a lack disposable income. Among this category there are few exceptions - senior citizens who collect similar devices purely out of interest or for entertainment purposes, often collecting manuals and learning how these devices work on their own. If they have relatives (for example, grandchildren), sometimes the device is handed to them as a gift. The other (and more numerous) category are those senior citizens who do not appear to have significant interest in the modern technology, computers or even the internet.

To conclude this chapter, we can say that senior citizens who use modern technology are generally active and interested in learning new things. There are individuals who are actively involved in various courses, are members of associations and lead rich social life. They often use modern technology to communicate with others in order to avoid stagnation in development and better integrate into society.

#### IV. CONCLUSION

The aim of the research was to compare among themselves a number of groups of senior citizens (those senior citizens who have regular contact with relatives and continuous access to modern technologies, senior citizens who live alone but use a lot of what modern technology has to offer, and then the last category - the elderly who live in nursing homes or alone with almost no contact with relatives or friends and technology for them is something basically never used). Among these categories we determined the attitudes toward the use of technology, whether and which ones are used and how often, how to learn to work with them and what problems they encounter.

The research showed that active senior citizens use technology extensively and are interested in constantly learning new things and improving their abilities. These individuals often attend various courses (not necessarily focused on modern technology and science), are members of associations and lead fulfilling social life. The technology used to communicate with others brings them good feelings that they can learn something new and useful in their life, and integrate more into contemporary society. This represents a very specific group of active senior individuals. From this group we can differentiate a second kind of senior citizens, those living alone but still actively using modern technology. People in this group generally need to be able to work with computers, the internet and other to be able to remain in close contact with their loved ones who have no time for regular visits. The last group of senior citizens was distinctly different. These senior citizens were generally much older, either living in a nursing home or alone and with little or no contact with loved ones. Many of these senior citizens presented no interest in modern technology, did not see any potential in them and found them to be of no use. This category includes few exceptions – individuals who are technology enthusiasts curious in how various devices work but rarely have one of their own, thus suffer from lacking ability to use them. Such cases, though, are rare.

Senior citizens today are different than they were ten or twenty years ago. They are often heavily influenced by technologies already in use. Thanks to the increase in average life expectancy and higher technological aptitude among future senior citizens it is necessary to constantly learn new things and this category includes modern technologies. We conclude that in another ten years, senior citizens will be relatively technically knowledgeable and computers, the internet or even that specific device such as a tablet or

smartphone will be considered an integral part of their lives.

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