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Promoting ICT knowledge for the elderly people

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1. Introduction

The present report was developed within the framework of the project "ICT4Elders – Promoting ICT knowledge for the elderly people", which is implemented in the Czech Republic, Greece, Germany, and Luxembourg, with the financial support of the Erasmus+ Programme of the European Union. The purpose of the present document, hereafter referred to as "Final Report", is to present the findings of the primary and secondary research activities performed in the partner counties under the scope of Intellectual Output 1 (IO1) of the project, entitled "Behavioural Analysis on the negative effects of Information Technology illiteracy on Elderly People". The Final Report aims to consolidate the main findings and conclusions of the national activities and provide recommendations for the development of training and guidance schemes in the next IOs of the project.

1.1. The ICT4Elders Project

The ICT4Elders project aims to bridge the digital divide between generations by enhancing the digital skills and competencies of older people. Taking into consideration that, according to Eurostat, two fifths of people aged between 65 and 74 years old have never used even a computer, the project seeks to transform the rapid digital transformation into an opportunity for growth, active ageing, and social inclusion of older adults.

Within this context, the main objectives of the ICT4Elders project are:

- ✓ To promote ICT education and lifelong learning of older adults.
- ✓ To strengthen older adults' motivation through guided learning in the use of the internet and ICT applications.
- ✓ To offer older adults the opportunity for growth and for a better quality of life through active ageing and by being dynamic members of the society.
- ✓ To enhance the skills, knowledge, and competences of care givers of older people.
- ✓ To support Active Ageing Organizations and Nursing Homes in providing older individuals and their families services of high quality.

1.2. Overview and scope of the IO1 research activities

The overall objective of the first Intellectual Output 1 (IO1) of the project and of the present Final Report is to create a solid knowledge base for the development and implementation of the upcoming activities of the project. More specifically, the end goal of this output is to ensure that the project will respond directly to the issues that older people experience due to the rapid changes resulting from the dominance of digital services and applications.

For that purpose, a detailed methodological framework was developed to guide the analysis and research conducted by the partners in the Czech Republic and in Greece. In line with the methodological framework, the following key **research questions** were formulated:

- x whether and how often older people use the Internet;
- x the purposes for which they use it;
- x the reasons for which they do not (often) use it;
- x their online behavioural patterns;

- the extent to which they understand the potential dangers of the digital world;
- the extent to which they take advantage of the opportunities that the digital world can offer;
- the extent to which they are vulnerable to issues that could lead them to social exclusion.

Pursuant to the methodological framework, comprehensive desk and field research was performed, combining both qualitative and quantitative research. In particular, the following activities were implemented in the partner countries:

Desk research and scoping analysis

Partners conducted desk research and small-scale scoping studies in order to examine common themes in the participating counties with regard to the needs and issues that older people face in the use of digital technologies.

Interviews with older adults

Following the review of the literature, interviews with older persons in the participating countries were performed. In total, 26 individual interviews were conducted in Greece and the Czech Republic, aiming to collect information and in-depth insight into the experiences, needs, and views of older people regarding the use of the internet and ICT tools and applications.

Survey with professionals and family members of older people

The findings from the individual interviews were supplemented with the results of a survey completed by professionals working with older persons and by family members. In total, 65 persons completed the survey in the Czech Republic and in Greece. Additional information was also collected by ConBK Consult GbR from 15 residents and stakeholders of retiring and nursing houses in Germany to supplement the information from the two target countries.

Social experiment on the vulnerability of ICT illiterate elderly people in online threats

The final activity employed an innovative methodological approach in examining the vulnerability of older individuals to fake news. An experiment was conducted during which participants were presented with both fake and credible news stories and were asked to assess their plausibility and truthfulness. A total number of 22 older individuals took part in this activity.

National and Final Reports

The findings from the desk and primary research were subsequently analysed by the partners in the Czech Republic and in Greece into National Reports. This Final Report aims to compile and synthesize the national findings and conclusions regarding the current situation and existing needs of older people. Finally, the present report will also aim at providing recommendations for the next project activities, and especially the development of the training and guidance schemes in the next IOs, to effectively respond to the need areas identified and address the potential gaps.

2. Desk research and scoping analysis

According to Eurostat (2020), 90.5 million people aged 65 years or more were living in the European Union in 2019, representing approximately 20% of the EU-27 population. Over the next decades the number of older people is projected to progressively increase, reaching a share of approximately 30% of the total population in 2050. The growing number of older people has created a range of societal challenges, and the digital divide between generations is among them.

Indicatively, according to the same source (Eurostat, 2020), in 2017 more than 40% of individuals between the ages 65 and 74 across the EU had never used a computer. Although a substantial improvement has been observed over the past years, with the respective rate in the Czech Republic falling from approximately 80% in 2008 to 40% in 2017, in Greece the corresponding rates were close to 100% in 2008, decreasing to 78% in 2017.

The Covid-19 pandemic and the subsequent social distancing measures and restrictions on movement have significantly altered the landscape, further highlighting the risk of digital, and by extension social, exclusion of older people. As recent data from Eurostat (2021) show, the share of people aged 65-74 who used the internet in the last 3 months of 2020 was 53% in the Czech Republic and only 33% in Greece.

Thus, older adults during the pandemic were at risk of "feeling doubly excluded", both from physical contact but also from social participation in digital events (Seifert et al., 2021). The increasing transition to online information and services – that had already started but was further intensified during the pandemic – could eventually perpetuate ageism (Seifert et al., 2021). To that end, the table below summarizes the links and effects of digital exclusion and the social exclusion of older adults with restricted access to the internet and limited familiarization with digital technologies.

Social exclusion VS digital exclusion	
Social exclusion	**Digital exclusion**
Deterioration in material condition, unemployment	Inability to find a job in the rapidly developing IT sector, inability to work in jobs that require IT knowledge.
Limited communication in society	Impossibility to stay in touch with members of information society through the tools, which this society uses.
Limited possibility of using public services	Limited possibility of using e-government services (data box, citizen's portal, public registers, etc.).
Discrimination	Discrimination based on insufficient digital literacy of people, who don't have access to ICT.

Source: ICT4Elders National Report - Czech Republic

As a recent report (WE4AHA, 2020) shows that during the pandemic, governments across Europe have been taking several steps towards developing and implementing initiatives aiming to reduce the social isolation of older adults. Home care and support services, community volunteering, and digital technology, including telecare services and e-consultations, were among them. The overall objective

of these initiatives was to support older adults to stay connected with their families and communities, while still living their independent lives. Unsurprisingly though, the limited digital literacy skills of older adults were a major challenge in the implementation of such initiatives. Thus, the impact of these initiatives on the social inclusion of older adults has yet to be determined.

Despite some concerns, studies also show that older adults remain rather interested in the use of digital technologies supporting independent living (D'onofrio et al., 2018). However, the changing family structure over the past years, with older people no longer living with their children, has also resulted in a lack of assistance in tackling everyday activities, including digital ones (Daniele et al., 2019). At the same time, an increasing number of people decide to retire in various care facilities, where diverse aspects regarding older people's use of ICT, such as lack of resources, need to be taken into consideration (Moyle et al., 2018).

On a national level, in the **Czech Republic** the share of older individuals that are using the internet is growing. However, certain barriers remain evident. According to the available data, lack of access to the internet or inability to use it are among the most prevalent reasons widening the digital divide (MEDIAN, s.r.o., 2017). Most importantly though, the majority of older people report that they do not know for which purposes they could use the internet, or that they simply do not need it (MEDIAN, s.r.o., 2017).

According to official statistical data (Czech Statistical Office, 2020) the main activities for which older individuals in the Czech Republic use the internet is communication, and in particular email exchanges, followed by the use of other communications apps (e.g., WhatsApp or Skype). In addition, according to the same data, people often use the internet as a source of information primarily for goods and services, as well as health related aspects. The data also show that reading news and articles online is among the most common activities pursued by older people, in contrast to the use of the internet for entertainment purposes (e.g., music, videos etc.). The rate of individuals using internet banking, online government services, e-health services, and online shopping has been progressively increasing over the years, but the relevant shares remain quite low.

Regarding to education or training online, despite the availability of relevant options, the share of older people that participate in online training, use teaching materials available online, or communicate through educational portals is trivial (Czech Statistical Office, 2020). At the same time in the Czech Republic there is a relatively wide number of opportunities available for training focusing on ICT, including non-formal training for older people specifically. However, participation remains quite low, with approximately a third of older individuals noting that there is no need for them to be trained in ICT (Czech Statistical Office, 2018).

In **Greece** the limited access of older people to digital technologies and the internet appears to be a rather complex matter. Lack of systematic policy on a centralized level, including cooperation with regional authorities and the private sector, is one of the associated factors (Alexopoulou, 2020b). Most importantly though, culture specific aspects and what has been described as "borrowed access" to

technology constitute the main influencing factors (Alexopoulou, 2020a). The latter term describes in essence the fact that older people rely predominantly on the support of their family, such as their children, and close social environment to "access" digital technologies (Alexopoulou, 2020a).

At the same time, according to a relevant study (Karagianni, 2018), older people in Greece appear to use the internet for information, entertainment, and communication with others. They consider the immediate communication, regardless of distance and time, as the major advantage of the internet. On the other hand, the resulting alienation of personal contacts is perceived as the main disadvantage, since for older people it represents interpersonal contact with others.

With regard to aspects hindering the use of technologies, the level of digital skills of older people appears to be the main influencing factor (Stefa, 2019). As such the emerging need for formal and informal care givers to incorporate "training" in digital skills in their daily practice with older adults has been noted as a best practice in this regard (Stefa, 2019). However, the heterogeneity of educational programs, the fact that the content is not adapted to the educational needs of older people, and the technophobia due to minimal digital skills seem to be the major barriers to their learning process (Papoutsi, 2019).

In response, a number of forms of **training** have been proposed to reduce the digital divide and enhance the ICT skills of older people. For instance, a few of the **good practices** that can be found in the literature include the use of:

- simple self-learning applications for the basic operations of a smartphone which can significantly improve the operational skills of older people (Toyota et al., 2014);
- realistic icons in applications to facilitate the overall understanding of older populations regarding the purpose of the applications and their use (Cho et al., 2015);
- gamification, that is applying game elements to nongame fields (de Vette et al., 2015), as video games have been found to improve the cognitive and emotional skills of people, including older adults (Pallavicini et al., 2018);
- individual reward schemes when older adults use, for example, a recommended app in addition to their normal daily routines, has also been suggested as an effective method that supports the well-being of older individuals (Rist et al., 2018).

Nonetheless, how the benefits, skills, or behavioural changes of older people participating in short-term training programs or interventions can be sustained in the long-term remains an ongoing concern (Bevilacqua et al., 2020).

3. Primary research

3.1. Key findings from the interviews with older adults

A series of interviews with the participation of older people living the Czech Republic and in Greece were conducted in the framework of the project during the first months of 2021. The aim of the interviews was to supplement and expand on the findings of the literature review, exploring the views and thoughts of older people regarding the use of the internet and digital technologies. In total 16 interviews were performed in person and via telephone, due to the ongoing restrictions resulting from the Covid-19 pandemic.

The **main characteristics of the sample** in each country are provided below:

- In the **Czech Republic**, the sample consisted of 16 individuals (5 male, 11 female) aged 60-90+ years. All of the participants were retired, and most of them had completed higher education. Almost 70 % of participants had worked with computers during their last employment.
- In **Greece**, 10 individuals between the age of 65 to 73 years took part in the interviews. Half of them were male and half female. Four of the participants were still working at that time, while the other six were retired. All of them had completed at least high school education and had a wide range of economic backgrounds.

In addition to the above, a study involving 15 residents and stakeholders in retirement and nursing facilities in Germany was performed in order to further expand on the information collected in the two primary target countries. A modified version of the interview outline was used, and the survey was completed primarily via email and phone.

The next sections present and synthesize the main findings and conclusions from the interviews in the Czech Republic and Greece, followed by a final section summarizing the relevant results from the survey performed in Germany.

▶ Ownership and usage of the internet and ICT devices

Approximately 70-90% of the participants interviewed in both the Czech Republic and in Greece indicated that they own some form of digital device, such as a personal computer, laptop, or smartphone. The main reasons for not owning digital devices or using the internet was lack of digital skills and difficulties understanding technology. Although most of the participants used devices such as smartphones daily, their monthly use of personal computers or laptops could be described as average to low. For example, participants in Greece used such devices only when necessary and for specific purposes, such as work related aspects, bank transactions, or information search.

▶ Main purposes and applications used

The main purposes for which the participants used the internet and their devices were consistent between the two countries. Participants both in the Czech Republic and in Greece mentioned that they primarily used the internet for news and information research, communication apps, and emails. In particular, the most frequent purposes and applications used were the following:

(a) news sites (e.g., BBC News, Euronews etc.) and information search for specific personal interests or subjects (e.g., Google search engine);
(b) messaging, calls or video calls on communication apps (e.g., Skype, Viber, Messenger and What's App);
(c) email exchanges for business or personal communications (e.g., Gmail).

Other purposes reported by only a handful of the participants included:

(d) social media interactions (e.g., Facebook and Instagram),
(e) watching films and videos (e.g., YouTube),
(f) online shopping,
(g) communication with public authorities, and
(h) internet banking transactions.

Social interactions

Rather few of the participants interviewed in both countries used social media platforms, but the majority did use various communication apps for their social interactions on a daily basis. Overall, participants appeared to favor calls or video calls instead of messaging, as they tend to find the messaging a less personal and intimate form of communication. The ability to freely talk and message others at any time or place was the main reason for which the participants favored free communication apps. The few participants that did use social media platforms mentioned that they use them mostly for updates on their friends' lives and not to interact with friends directly through social media.

ICT knowledge and skills, and challenges experienced

Although very few of the participants in both countries had received any prior ICT related training, more than half of them rated their existing knowledge and skills as sufficient or average to good or very good. Nonetheless, almost all participants admitted facing difficulties and that they often have to ask for help to solve certain issues. Participants in Greece mentioned that they most often ask their children or a close family member, friend or acquaintance that has better knowledge, for support and assistance.

Most of the participants in Greece and the Czech Republic would appreciate some form of assistance or training on ICT use. Notably, even participants that had received some form of prior training still rated their current skills and knowledge as insufficient or would repeat the training as a lot of the things they have learned appear to face over time if they don't implement them in practice that often.

Participants in Greece noted that the most helpful method for them would be to learn by someone teaching them or showing them step by step how to use certain applications and perform tasks online. Additional methods suggested by the participants also indicated that learning on a one-to-one basis appeared to be the preferred method. Personal training on their own time assisted by someone with more advanced knowledge or through assisted learning videos (e.g., YouTube) were also among the suggested alternatives. Although in principle participants were not opposed to more structured

training (e.g., through an organization for ICT literacy), some of them noted that they find it unnecessary for their age group.

Likewise, the participants interviewed in the Czech Republic would like to receive training on topics such as installation and use of applications, use of applications for video calls, and how to use web browsers. Topics such email exchanges, social media platforms, and watching films and videos online were also among those most often suggested by the participants. Online safety, such as security settings for devices and online shopping or public services were mentioned by fewer participants.

Importance of digital technologies for the individual

Participants were also asked to share their views regarding the importance of digital technologies for the individual, based on their personal opinions or the opinions of people within their close personal environments. Overall, most of the participants in the interviews conducted both in the Czech Republic and in Greece, recognize the importance of digital technologies and the internet. However, approximately half of them do not believe that digital technologies play an important role in their lives and could live without them.

More specifically, in the Czech Republic approximately 20% noted that digital technologies are not important for older people, approximately 30% that are very important and they cannot imagine their lives without them, and 50% that digital technologies are important, but they can live without them. According to most of the participants, their importance relates primarily to the fact that they use digital technologies to communicate with relatives and the persons close to them. Secondary reasons were also related to aspects such as email communications, news, or internet banking.

In Greece all participants were unanimous in their view that digital technologies are utterly important for the daily life of people and represent the “future”. In particular, they believed that ICT knowledge and skills are essential as every aspect nowadays requires technology for tasks ranging from a simple transaction to finding information about a specific topic. At the same time though, they also consider them as “necessary evil” and believe that digital technologies are more suited for young people. To that end, half of the respondents did not believe that ICT and the internet plays an important role in their lives, noting that they are content with what knowledge and skills they currently have.

Participants were also asked to share what they perceived as advantages and disadvantages of ICT and the internet. Regarding the main advantages, respondents in both countries agreed that they can make their lives easier (e.g., internet banking/transactions) and facilitate their communication with others. Additional advantages noted were the breadth of information online about all topics, which can be accessed fast, and that ICT has also made their work easier (e.g., working remotely).

Regarding potential disadvantages, some of the participants referred to the loss of human interaction and physical activity, as well as potential dangers to health (e.g., back problems). Few of the participants talked about the exposure to dangers online, such as hacking, false information, or personal danger. Lastly, the quick transformation of digital technologies was also noted as a disadvantage by some of the participants. Since applications or software tend to change rapidly, once

they have learned how to use a prior version its environment changes and they are unable to use it any longer.

Vulnerability to social exclusion

Slightly different answers regarding vulnerability and social exclusion were reported among the participants in Greece and the Czech Republic. In particular participants were asked to share their thoughts about their existing level of usage and whether they would like to take advantage of the opportunities that the internet/communication technologies can offer. Less than half of the participants in Greece responded positively, while two thirds of the interviewees in the Czech Republic would like to use digital technologies more often.

Approximately half of the participants in the Czech Republic noted that they have limited opportunities due to their lack of digital skills, without this however restricting or influencing their lives. Likewise, most of the participants in Greece believed that their lives were not restricted in any way, while few noted the restrictions such as interacting with others. Some of the participants in the Czech Republic also mentioned that they would like to be able to use more communication applications (e.g., messaging, video calls), but most importantly become more familiar with web browsing.

Economic factors and financial transactions

Approximately half of the participants in Greece and almost all the participants in the Czech Republic believe that economic factors are associated with the use of the internet and digital technologies. Monthly costs for internet providers and the prices of technological devices were among the factors mentioned.

With regard to online transactions, half of the participants in the Czech Republic think that internet banking and online shopping are safe, also noting the advantage of saving time and having wider options. On the other hand, they did also refer to the disadvantages of receiving refunds from fraudulent e-shops and theft of data.

Likewise, in Greece 4 out of 10 participants thought that online transactions are safe, at least to a certain point, since nothing is completely safe, and attention is always needed. Some were more reluctant since they keep hearing about fraud and data theft. One participant was suspicious of them since they had some issues in the past and another participant said that they feel safer with only simple transactions such as checking a bank statement. The main advantage noted by the participants in Greece was also the quick and easy nature of online transactions.

Ability to identify online harms and dangers

The last thematic section focused on the participants perceptions and ability to identify online threats and dangers. Overall, the findings in both countries appear to be rather compatible, with the majority of the participants being aware of such phenomena but taking little action against them.

For instance, in Greece all participants agreed that the internet can cause harm or damage. Eight out of the 10 participants referred to the dangers for children, given that perpetrators can hide behind anonymity. Additionally, two of the participants in Greece noted the economic harm through theft and the health harms due to overuse, and one interviewee spoke about the harm of being monitored constantly.

Likewise, most of the participants pay little to no attention to the sources and the truthfulness of the information that they read online. Less than half of the participants are aware of the existence of fake news online but claim not to have personal experience with them.

The findings of the interviews also show that older people take limited precautions regarding online dangers. Some of them use no security measures; approximately half use a simple password; and rather few use more advanced methods (e.g., firewall), which they often find too complicated to use. Notably, the participants in Greece that use little to no security measures, justified this on the basis they do not use the internet for anything special and that they immediately leave when entering any suspicious pages.

Lastly, the majority of the participants in both countries, especially those that used the internet, appeared to be aware of online dangers such as identity theft, fraud, and electronic phishing. However, the participants noted that they do not have personal experience with such phenomena. Nonetheless, in both countries it was also observed that their knowledge on the topic was mostly superficial as their answers were rather vague in nature.

Overview of key findings from the research in Germany

As previously described, a supplementary survey was performed in Germany involving 15 residents and stakeholders of retirement and nursing facilities. The study aimed to provide further context and confirm the findings from the Czech Republic and Greece, that constituted the main target countries of the present report. The key findings from the survey are briefly summarized below for each of the thematic categories examined. Overall, it could be suggested that the results from the survey in Germany appear to be in line with the previous findings in the Czech Republic and Greece, although participants in Germany appear to be slightly more involved and experienced in ICT.

1. **Ownership and usage of the internet and ICT devices**: All 15 participants owned a personal computer, laptop, smartphone, or tablet, and 13 of them used their devices daily, between 10 and 250 hours per month.
2. **Main purposes and applications used:** Participants mostly used search engines, news, social media, e-mails, WhatsApp; but also used the internet for social contacts, movies, video calls, e-banking, and online shopping.
3. **Social interactions:** Overall reasonable use of online social interactions was observed, with participants using apps such as WhatsApp, and video calls. However, they experienced increasing difficulties and needed help to interact on social media (e.g., Facebook).

4. **ICT knowledge and skills, and challenges experienced:** 13 of the participants would follow an ICT-related training course. In addition, 9 participants responded that they do not experience difficulties or problems using ICT and 5 mentioned that they can solve problems by themselves. But also 11 participants ask others for help from to deal with ICT related issues. Finally, the following thematic areas were identified by the participants as useful training contents: protective measures; legal issues; more precise, understandable, and shorter instructions; use of simplified audio versions.
5. **Importance of digital technologies for the individual**: For 10 of the 15 respondents IT skills, internet, and/or communication technologies play an important role. The following examples regarding their importance were provided by the participants: social communication and information gathering, networking, malware detection, office management, research on customers, leisure time, social contacts, information search, online training, and video conferencing. Likewise, the main advantages noted were the fast nature, the fact that follow-up is possible, the flexibility in terms of time, the time and cost savings, and that research is easily possible. Among the disadvantages noted by the participants were the potential addiction, the reduction of in person contacts, the unknown/invisible persons, bullying, crime, and the fact that risks cannot be estimated.
6. **Vulnerability to social exclusion**: Only 4 participants mentioned that they wanted to make better use of the possibilities of the Internet and staying mentally fit for a longer time was also among the advantages of ICT noted.
7. **Economic factors and financial transactions:** Out of the 15 participants, 7 noted that access to the Internet and technological devices requires more financial resources, while the remaining 8 respondents disagreed. When asked if the internet is safe to use for online shopping or e-banking, 8 participants agreed and 5 disagreed. The fact that 100% protection is not possible, fraud and data tapping, scams, and phishing were among the potential factors identified by the participants disagreeing with this statement.
8. **Ability to identify online harms and threats**: Only 9 of the 15 participants checked for the credibility of information online, and only 6 mentioned being aware of false news or information online. Similarly, 7 of the respondents noted that they are aware of the potential threats related to identity theft or fraud online. With regard to online safety, 8 use password protection, 4 use firewalls, 1 uses an antivirus programme, and 1 participant mentioned avoiding unknown sources.

3.2. Main results of the survey with professionals and family members

In addition to the interviews with older people, a survey with the participation of professionals and family members was also conducted. In line with the relevant methodological framework, the combination of qualitative and quantitative methods and the diverse target groups aimed at facilitating a more in-depth assessment of the national context.

Thus, in an effort to better inform the future project activities, the aim of the survey was twofold. Firstly, it sought to explore themes similar to those examined during the interviews with older persons, so as to gain a deeper and more holistic view of the issues that the elderly face. And secondly, it aimed at investigating the needs and preferences of professionals and family members with regard to the skills they need in order to better train and guide older people in the use of digital technologies.

The survey was completed by a total number of **65 individuals** across both countries, and the **participants' profile** in each country is provided below:

- In the **Czech Republic**, the sample consisted of 34 professionals and family members. Out of the total sample, 22 were professionals working with older people, and 12 respondents were family members. The age of the participants ranged between 18 and 60+ years, with more than half of the sample being 40 years or above.
- In **Greece**, 31 family members and professionals participated in the survey. Their age ranged between 18 and 60+ years, with approximately half of the participants belonging to the 25-39 age group. Out of them 23 were women, 7 were men and 1 chose not to identify their gender. The sample of professionals consisted of physicians, clinical psychologists, clinical neuropsychologists, pneumologists, pathologists, gerontologists, and nursing staff working with older people. Among the professionals, 60% worked in the sector for 10 to 20 years, 20% for more than 20 years, and another 20% for less than a year.

The key findings and conclusions from the survey conducted in both countries are summarized in the following sections.

Ownership and usage of ICT devices and applications

More than half of the respondents in both the Czech Republic (70%) and in Greece (55%) indicated that the older people in their work or family environment do not own any form of digital devices, such as a personal computer, laptop, or smartphone. Lack of digital skills, insecurity or fear, and lack of interest were the most prevalent reasons for which older people do not own digital devices. A difference was, however, observed between the two countries in the frequency that the older individuals that own devices use them. In Greece more than half of the participants never or hardly ever use their digital devices and approximately 40% use them daily or weekly. In the Czech Republic the vast majority use their devices daily or weekly, and only 20% never or hardly ever use them.

Digital skills and competencies

Based on the assessment of the professionals and family members, it appears that the majority of older people face difficulties with several key tasks associated with the usage of the internet and ICT tools. More than half of the respondents indicated that older individuals experience issues in installing and setting up new applications, software, or digital devices, but also in applying and modifying simple functions and settings (e.g., change default settings). Likewise, they seem to encounter difficulties in selecting digital tools or devices that meet their needs and assess their effectiveness. Varied answers

were observed regarding their ability to solve routine problems and seek support and assistance when technical problems occur.

Online safety

Among the key online safety issues identified, according to the professionals and family members surveyed, was the fact that older individuals tend not to use different passwords and modify them on a periodic basis for protection issues. Likewise, they seem to neglect the subject of keeping copies of information or files they have stored as back up. Similarly, although some appear to install security software on the devices they use, they face difficulties in configuring and modifying the relevant settings. In addition, approximately 40% of the respondents mentioned that older people are unaware of potential online dangers such identity thefts, scams, and online phishing.

Different results were observed among the two countries regarding the awareness of older people that their online credentials can be stolen and, thus, should be treated confidentially. More than half of the respondents in Greece indicated that older people lack awareness of this, while 38% in the Czech Republic agreed that they are in fact aware of password or data theft. Lastly, 58% of the respondents in Greece and 40% in the Czech Republic indicated that older individuals experience difficulties in assessing the reliability of the information they find online and comparing different sources.

Level of awareness and opportunities

Mixed responses were given by the professionals and family members regarding the awareness level of older people about the opportunities that the internet/digital technologies can offer. Approximately 65% of the participants in Greece thought that their level of awareness was inefficient or completely inefficient. The respective rate in the Czech Republic was 28%, while 50% rated their level of awareness as adequate or very adequate.

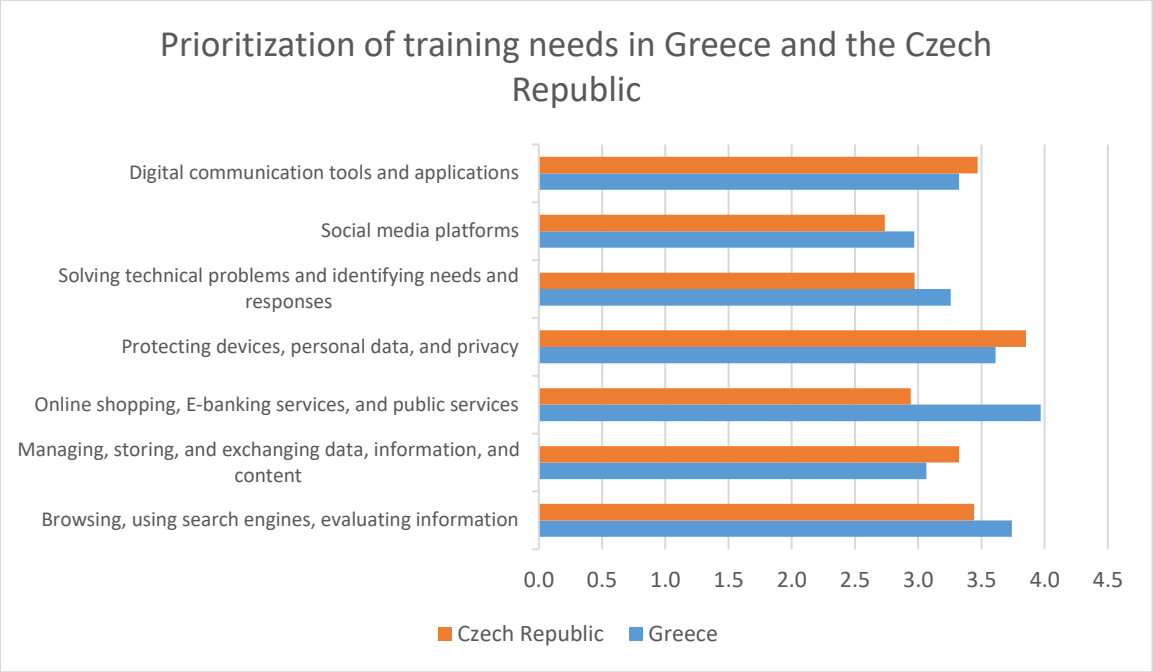
Nonetheless, in both countries, only 20-30% of the respondents indicated that older people take advantage of such opportunities on adequate levels. Lastly, when participants were asked if the current level of use of the internet/ digital technologies by the older persons restrict their life in any important ways, half of the participants replied that they weren't sure or that they didn't know.

ICT training for older individuals

In the next section of the survey, professionals and family members were asked to indicate the importance and usefulness of certain topics for the development of an ICT training course for older individuals. According to their views, all thematic areas proposed were considered important by at least half of the participants. However, a few differences in the prioritization of needs were observed among the two countries. The figure below presents the average importance on a scale of 1 (not important) to 5 (extremely important) given by the participants in Greece and the Czech Republic regarding each training area or topic.

As the graph indicates, online shopping, e-banking and public services was the topic prioritized by most respondents in Greece. In contrast, with an average score of less than 3, this topic was

considered as only somewhat important by the respondents in the Czech Republic. Protecting devices, personal data, and privacy was the topic prioritized the most by participants in the Czech Republic. As the graph also illustrates, slight differences on the perceived importance were also observed among the remaining topics. Nonetheless, all the remaining thematic areas were rated as at least important in both countries, except for social media platforms that were considered as only somewhat important by all respondents.



Challenges in capacity building

When family members and professionals were asked to identify challenges that older individuals face in building their capacities/ knowledge on ICT skills, the participants provided rather insightful responses and examples. According to their views, older people face several challenges and difficulties when trying to improve their ICT skills, including:

- The fact that the ICT field is very complicated and complex (e.g. difficulty in choosing the right device)
- Applications and software often undergo updates/changes.
- Lack of awareness/information and difficulty in understanding new technologies
- Lack of skills, knowledge, education/training, and familiarity with ICT (e.g. difficulties in using touch screens).
- Lack of proper support and programs that promote ICT literacy for older people.
- Insecurity and fear.
- Reluctance or refusal to adapt to new things.
- Memory difficulties

- x Lack of resources.

Training methods and tools

Finally, participants were asked which, according to their views, are the most effective training or teaching methods in building the ICT capacities and knowledge of older persons. The majority of the respondents emphasized the need for practical training with repetitions on each topic discussed. Similarly, the need for a slow pace and a focus on user friendly applications and programs designed for their age was also highlighted. The main suggestions of the participants regarding the training instructors, methods, and contents or structure are listed below.

Training Instructors:

- ✓ Lessons provided by care givers, family members, or other persons close to the older individuals.
- ✓ Instructors to be specifically trained in teaching older adults.

Training methods:

- ✓ Individual training, on a one-to-one basis.
- ✓ Practical lessons with a lot of practical examples.
- ✓ Provide hard copies and material they are familiar with in order to help them acclimate faster.
- ✓ Make courses/seminars accessible even through gathering places of older people.
- ✓ Encourage safety and support during the entire learning process.

Training structure/contents:

- ✓ Easy to follow and slow-paced seminars.
- ✓ Increased repetition for each area or topic.
- ✓ Include training on basic ICT English words/language.
- ✓ Focus on user friendly applications and programs designed for their age.

4. Social experiment and vulnerability to fake news

In addition to the interviews and the surveys performed, an innovative methodological approach employing a social experiment was also implemented. The experiment focused on the susceptibility of older people to fake news, presenting stories that involved both news from credible sources and fake news. Participants were asked to select the news stories that they considered as true and plausible and the ones, if any, that they believed to be untrue or distorted.

Thus, according to the relevant methodology, the experiment aimed at assessing the susceptibility and vulnerability to fake news of individuals that lack or have limited digital skills, competences, and access. At the same time, another key objective of this activity was to increase the participants' awareness and sensitivity regarding the dangers and potential harmful effects of the digital world if they do not possess the required skills and access to verify potentially misleading information.

The next section presents an overview of how the experiment was implemented in the Czech Republic and in Greece and the participants' profile, followed by a synthesis of the findings and conclusions reached.

▶ Overview of the social experiments and participants' profile

In the **Czech Republic** the sample consisted of 12 people with an average age of 89 years, 3 of whom were male and the rest female. The experiment was implemented in two groups, each comprising 6 participants. A total number of six news headlines was presented, and the relevant topics are listed below.

Real news:

- ✓ Anyone can buy a tracking program, sometimes the victims have no choice, but to change their phone.
- ✓ Where is the risk of covid-19 infection? New evidence from scientists will not please you.
- ✓ The effectiveness of AstraZeneca after a single dose is 76 percent.

Fake news:

- x Czech children will now learn multicultural education instead of the laws of physics
- x Vegetarians getting tougher! Meat and the salami will disappear from stores after their pressure for a month! It's a test.
- x In the Czech Republic, business has grown with covid-19 tests, their results are known in advance! According to the obtained information, the regions also took part in the machinations

In **Greece** the experiment was conducted on an individual basis due to the ongoing restrictions on movement in place to counter the spread of the Covid-19 pandemic. The sample consisted of five male and five female participants between the ages of 65 and 73 years. Ten news stories were selected and presented to the participants, which are also listed below.

Real news:

- ✓ Forced weddings for 765 million children before they turn 18.
- ✓ COVID 19: The President of the USA revealed he takes pills of hydroxychloroquine.
- ✓ European Medicines Agency started the evaluation of the Russian vaccine Sputnik V.
- ✓ Scientists find a 20,000-year-old link between Brazil's Indigenous people and Ancient Australians.
- ✓ How one of Mexico's most fearsome cartels, bought its weapons online.

Fake news:

- x Studying Ancient Greek reprograms the brain of dyslexic children.
- x Police Notice – what info we shouldn't post online and why.
- x The children of women who take antidepressants are in danger of suffering from autism.
- x Research "death" lab in Georgia, USA discovered the Russians.
- x The airport of Houston, Texas was flooded due to severe weather conditions. Planes were immobilized.

▶ Key findings and conclusions

The different approaches to the implementation of this activity in the Czech Republic and in Greece resulted in some rather interesting findings. A significant difference was observed in the accuracy rate, correctly discriminating between fake and real news, among the two countries. For instance, in Greece an average accuracy rate of 50% was observed across all 10 participants. In contrast, the average accuracy was approximately 80% in the Czech Republic, with all participants having an average above 50%. Thus, while Greek participants had difficulties discerning between real and fake news, respondents in the Czech Republic did not experience many issues in correctly recognizing the true stories.

A plausible explanation for this might be found in the dynamics of the group in the Czech Republic. As the researchers noted, not all individuals participated equally in the process, with some being more active during the discussion. As a result, it could be hypothesized that some of the participants may have been influenced by the rest in their responses. In contrast, participants in Greece experienced difficulties in understanding the process of the experiment. Most importantly though, even though they felt comfortable and at ease with the researchers, they were stressed in sharing their opinions in fear of making a mistake.

At the same time, the implementation of the experiments also yielded some important observations regarding the attitudes and beliefs of older people about the internet and potential vulnerabilities to misleading information. For instance, participants in Greece that scored the lowest on discriminating between fake and real news were the ones that did not own or use digital technologies and tools. As a result, they relied mostly on TV news for their answers regarding the truthfulness of the stories presented. Suggesting, therefore, that older individuals that do not have access to the digital word are far more at risk of susceptibility to fake news. Likewise, participants in the Czech Republic determined the credibility of a story based on their personal experiences and knowledge about the topics. News on topics that they did not possess personal experience or knowledge were far more difficult to verify.

Finally, the views of older adults regarding the virtual world were also reflected during the experiment and the news topics discussed. For example, participants thought that a story about buying weapons online was credible since they believed that these days you can buy and sell anything online. Similarly, while discussing online tracking programs, the participants expressed the opinion that a simple username and password are sufficient measures for online safety.

5. Conclusions and recommendations

A cross cutting observation stemming from the present report is that despite the growing number of older people using ICT and the internet in recent years, the digital divide between generations remains an important issue. The recent Covid-19 pandemic has further widened the gap, with potentially alarming consequences for the not only the digital but also the social exclusion of older individuals.

The phenomenon of limited digital literacy skills of older adults remains prevalent in the Czech Republic and even more so in Greece, but also, to a lesser extent in Germany. Based on the results of the present report, older individuals appear to recognize the importance of digital technologies. However, they do not believe that their limited familiarization with ICT is restricting or influencing their lives in important ways. The family members and professionals surveyed, though, appear to have a different perspective. As the majority of them believes that older adults do not take advantage on adequate levels of the opportunities that the internet/digital technologies can offer

At the same time, the study participants appear rather open and willing to further enhance their digital skills and competencies. In practice however, despite their willingness, the actual participation of older adults in relevant non-formal educational programs remains rather limited. The long-term maintenance of the knowledge and skills acquired by older people participating in ICT related education activities remains, however, a significant concern for the implementation of relevant initiatives (Bevilacqua et al., 2020).

To that end, based on the findings of the current report and the subsequent specification and prioritization of the key need areas identified, the following recommendations the development of training and guidance schemes in the next IOs of the project are proposed.

Methodology and training approach

- Individual teaching/mentoring on one-to-one basis.
- Demonstrations and step by step guides/guidance.
- Video or audio assisted learning and/or printed materials for ease of use and for future reference.
- Use of other non-formal learning methods, such as gamification.
- Learning through personal experience, instead of teaching.
- Practical courses with practical examples every step of the way.
- Easy to follow and slow-paced teaching/learning.
- Increased repetition for each area or topic.
- User friendly applications, programs, and contents designed or adapted to the educational needs of older people.
- Learning processes and approaches that encourage safety and support.

Training contents/topics

- Browsing and using search engines.
- Evaluating information online, credibility of sources, and potently fake news.
- Installation and use of applications and tools for online communication.
- Online safety, protecting devices, personal data, and privacy.
- Solving frequent technical problems and routine issues; modifying basic settings and functions of software and applications; installing and setting up applications/devices.
- Basic ICT English words/language.
- Online shopping, e-banking services, and public services.
- Managing, storing and exchanging data, information, and digital content.

Pool of Trainers

- Instructors to be specifically trained in teaching older adults.
- Lessons provided by carers, family members, or other persons close to the older individuals.
- Formal and informal carers that have daily contact with the older adults in order to incorporate the “ICT training” in their daily interaction.

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