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ICT4ELDERS

PROMOTING ICT KNOWLEDGE FOR THE ELDERLY PEOPLE

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National Report – Greece

IO1: Behavioral analysis on the negative effects of Information Technology illiteracy on elderly people

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A short statement from us

This program is taking place under the framework project "ICT4Elders – Promoting ICT Knowledge in the elderly people" (2020-1-CZ01-KA204-078197) with the support of the European Commission and is co-funded by the Erasmus+ Programme of the European Union.

With the aging of the general population and with the continuously rising threshold of life expectancy, it has become very clear that there is a vast and immense gap in between younger population and their elders as far as Information and Communications Technology is concerned. The aforementioned gap is a direct result of the Information Technology illiteracy of older people but it also derives from the lack of user friendly technology for elders and the almost complete absence of ICT training programs for older people.

The objective of this report is to analyze the situation that exists at the moment in Greece as far as ICT illiteracy in older people is concerned. Additionally the purpose of the report is to analyze the current needs of the elderly, so as the activities that will follow it will result to an effective response to the identified areas in need and will also tackle the missing gaps that exist.

In order to achieve all of the above, the following research questions will attempt to be answered:

- Whether and how often older people use the Internet
- What are the purposes of its use
- What are the reasons they do not use it (often)
- Their patterns of online behavior
- The extent to which they understand the potential dangers that exist in the digital world
- The extent to which they take advantage of the opportunities the digital world can offer them
- The extent to which they are vulnerable to issues that could lead to them being socially excluded

We will proceed with a brief report of the already existing Greek and foreign literature to present for our desk research, we will then present our methodology and results of our quantitative and qualitative research and also of a short social experiment that was conducted. Finally, we will argue our findings and discuss and highlight the most prominent ones.

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1. Desk Research and Scoping Analysis

One of the basic characteristics of the 21st century is that it is mandated by knowledge and technology. We are therefore talking about an information based society and in that society, information and communications technology is important for everyone in it and their everyday lives (Jun, 2020). In addition to all that, the COVID – 19 pandemic that has been raging all over the world for almost 2 years now, the widespread lockdowns and all the preventive measures have caused many issues for all individuals, from mental health issues to major social ones. As a solution to many of those mandatory restrictions, many of the activities that would normally happen in person began taking place digitally and day to day life started getting more and more digitalized (Van Jaarsveld, 2020).

Older people could not be exempt from all of the above and information utilization skills as well as information and communications literacy are starting to become essential in their leading affluent lives (Jun, 2020). The "Digital Divide", meaning the economic, social and demographic factors existing between people who use computers and those who do not, is getting bigger and bigger (Cresci & Jarosz, 2010). At the same time the focus of several industrialized countries has turned towards older age groups since the increasing longevity is starting to shift the age distribution of the populations towards them (Gomes et al., 2014) and with a population that is aging, it is really important if not essential to maintain their autonomy and good health for as long as possible (Fares et al., 2021). Study shows, older people unable to use online technologies display characteristics such as low education, low income and lower cognitive functioning (Andenberg et al., 2020). But that does not apply to everyone since experience and frequent use of technologies by older people might produce different results (de Almeida et al., 2015) and people who are more accustomed to their use have more positive attitudes towards them (Seifert & Schelling, 2018). A longitudinal study has shown that there are certain factors (emotional attachment, resources, support etc.) that are related to frequency of technology use and that there are also disruptive forces (social influences, competing needs etc.) that can affect it (Peek et al., 2019).

These past ten years, the family structure has changed dramatically and older people no longer live with their children. As a result they cannot always depend on assistance from their loved ones and they have to tackle day to day activities, including digital ones on their own (Daniele et al., 2019). Recent study has showed that seniors are really interested in the use of technologies to support independent living (D' Onofrio et al., 2018). On top of that more and more of them retire to care facilities and certain aspects of that should be taken into account as

far as ICT is concerned (Müller et al., 2012), as study has shown that there is a great lack of resources for the residents' use in that particular sector (Moyle et al., 2018).

1.1 Older People and ICT Skills

The use of Information and Communications Technology has the potential to improve the psychological well-being of the elderly (Fang et al., 2018). Using a laptop, a computer or a tablet can prove to be a challenge for older users, even though it can be really helpful in their interactions with family and care-givers (Scheepens et al., 2018). But as computing devices start to become more and more common in everyday life proper human-computer interfaces must be presented. That is especially important in the case of the elderly since they are the ones currently facing the most difficulties in using new and old technologies. This difficulties include cognitive, auditory and even motor-based problems and solving them might improve the quality of life of the elderly (Williams et al., 2013). And technostress is considered a threat to well-being later in life (Nimrod, 2018). Most concerns for seniors can be found in the following areas: how to close the digital divide, how to get access, the development of ICT systems, the creation of portals and how to maintain privacy intact (Shrewsbury, 2002). For example their concerns are ranging from security and privacy to the public's perception of them (Hornung et al., 2017). But also it is of great importance for them to stay digitally engaged and address their needs properly (Olphert & Damodaran, 2013).

Due to the fact that the elderly have specific and particular needs that have to do with aging, it has been suggested that they should be actively involved in designing and evaluating all types of devices and applications designed for them. In fact, recent study suggests that letting them be a part of the planning and design of an application, produces much better results than testing the final completed product and its usability on an older audience (Orso et al., 2015).

1.2 Older People, Health and ICT

One of the most common issues regarding the health of the older population, are the nonadherence and the errors in medication, especially for those with complex drug regiments. A study has produced results that show, an application that serves as a reminder for when medication must be consumed, has significantly improved adherence to medication intake even for older individuals with complex regiments but also for older people with no experience in the use of ICT (Mira et al., 2015). In order for the apps to be successful though they have to be tailored

to each individuals regiment and needs (Herrmann et al., 2020). As indicated by an experiment, an app interface designed to the requirements of the elderly has improved their engagement and their ability to use it (Kalimullah & Sushmitha, 2017). Additionally, a qualitative study has shown that telemedicine, meaning an application on a tablet for example, can assist older patients in their recovery but at the same time accommodate individual learning through several educational styles and the required health literacy to support self-care (Jensen et al., 2019). In general older people who use the Internet tend to report better health according to a certain study (Tavares, 2020).

At the same time applications designed to be used by patients and their health carers, can enhance patient education, make them take an active role in managing their condition and improve communications between them (Kotecha et al., 2018). A study that proposes the use of a TV in order to use applications, produced results showing that it is much more convenient for the elderly in their implementation of technologies, since they are already familiar with its use (Costa et al., 2016). And as another study has shown, an app that assists older people with exercising at home had positive results and remarks (Mehra et al., 2019).

Apart from bodily health though, mental health is also important, especially for the elderly who are living alone or in isolated areas. ICT has the potential to improve older people's social isolation via various ways (Chen & Schultz, 2016) and online social communities can help older people in feeling cherished and respected (Embarak et al., 2020). Results of a qualitative study have shown that ICT use has certainly improved the ability of older people to enrich their individual lives but has also enabled them to better connect with their social networks and to access more easily services and support they need in a wider service environment (Berg et al., 2017). Another study has shown that the directness provided by the use of ICT is considered one of the main advantages of them and that their main use is for staying in touch with their loved ones (Karagianni, 2018). In addition to that there is evidence that suggests that technological coaching interventions can benefit older people and their health over usual care. The benefits of such interventions are potentially lower costs and less burden for the therapists, but the major benefit is the opportunity to expand the range of clients that can be reached and assisted (Bevilacqua et al., 2020).

ICT can improve the lives of the elderly as easily as it does for the younger population and the same applies for their health. Using applications that are senior user friendly and that have taken into account all the difficulties that elders are facing in their use, can assist in promoting the health of older adults (Zhao et al., 2018) even by aiding them in something as simple as daily health maintenance using voice-only reporting (Liu et al., 2020) . Recent study has shown that a mobile app can improve significantly the cognitive skills of the older population, thus improving the probability of cognitive impairments that are considered one of the most feared conditions

among older adults (Martínez-Alcalá et al., 2018). Another example would be a game for people with dementia to help improve certain aspects of their lives (Westphal et al., 2017) or a system that can assist the elderly in their home (Seiderer et al., 2015). Digital applications can definitely assist greatly in home and personal health care with the proper and correct training (Stefa, 2019).

1.3 Ways to Improve ICT Skills and Bridge the Digital Divide

Based on the results of a certain study, it has been proven that the elderly are among the population groups that have been suffering the most serious results of the Digital Divide and that the most important cause for this is the lack of digital capacity. Therefore, a good solution to reduce the divide and to bridge the gap between the older population and the younger population, would be to improve digital capacity through several forms of education (Jun, 2020). For example a simple self-learning application for the basic operations of a smartphone, can greatly improve older people's operational skills (Toyota et al., 2014). Additionally, realism in an application's icon can improve understanding and purpose of its use by older populations (Cho et al., 2015). Another possible solution that could alleviate the nonuse of technology by the senior population would be gamification, meaning applying game elements to nongame fields (de Vette et al., 2015). But also video games have been found to improve cognitive and emotional skills even in older adults (Pallavicini et al., 2018). Reward schemes that are individually configurable when they use an app of daily recommended activities would also be effective (Rist et al., 2018).

Another study has provided us with an insight on how approaching the community of elders as a whole and develop programs, applications and technological interfaces easily accessible, usable, beneficial and convenient for that community can go a long ways to developing respect, communication, trust and foremost mutual understanding between the old and the young populations (Cresci & Jarosz, 2010). For example a study proposes assistive and monitoring technologies for their homes would be really helpful, as long as they aren't associated with the so called "gerontechnologies", which would automatically create negative attitudes from the elderly (Yusif et al., 2016). Additionally a study on interactive tools for explicating sensor monitoring that could assist them in daily home activities, have shown to engage the elderly democratically but also to make them more accepting towards technologies (Kanis et al., 2013). In general many applications of ICT focus in extending and maintaining the independence of older people and in the following years many of them will improve their lives and create new economic perspectives (Messiou, 2011).

Finally, last but not least, older people should be supported and encouraged in their ventures to learn and improve their ICT skills. Teachers should focus on slower teaching paces,

with a lot of practice and repetition and with the use of everyday activities as examples. And as far as the educational parties are concerned, they should definitely focus the training material to the needs of the older students and in the creation of same level learning groups (Papoutsi, 2019).

2. Field Research

2.1 Methods

• Study Design

For our field research we used a qualitative design, since we wanted to examine the subject in depth and with a lot of detail.

• Participants

Our sample consisted of 10 elderly people ranging from the age of 65 to the age of 73. Our sample (N=10) was evenly distributed (5 elderly males and 5 elderly females). Four of the participants were still working while the other six were retired. All of them had received at least high school education and had a wide range of economic backgrounds.

• Tools

We conducted interviews with the participants and we used a semi-structured interview to collect our data. We used a questionnaire that comprised of 8 thematic units that served as a guide. Additionally, each of these units had some basic questions and some extra questions in case further clarifications were needed.

• Procedure

First, due to the COVID-19 difficulties and restrictions, all participants were contacted by phone and were informed on the purpose of the study. They were then asked if they would like to participate in it and whoever agreed was then asked to choose a preferred method to conduct the interview. Five of the participants chose to be interviewed face to face and five chose to be interviewed by phone. All of the participants were given the consent form prior to the interviews. Those who were interviewed face to face before the interview started and those who were interviewed by phone received it through mail or email and sent it back through the same means. After the interviews, all participants were thanked for their participation and were then debriefed.

• Ethics

All participants were informed, that if at any point during their interviews they felt uncomfortable or uneasy, they could withdraw immediately or ask to stop. Before the interview started they were given time to feel comfortable and ready to start and they were informed that in case they needed clarifications about the questions they could always ask. Additionally, they all took part in the study on their own accord and they agreed to be taped on a mobile device by

giving their consent on record. Participants were informed that all their data was safe and that no personal information of theirs would be exposed to the public.

2.2 Results

The first thematic unit was about the average amount of time spent using the Internet and digital technologies. Participants were asked to describe shortly if and which was the amount of use they did as far as the Internet and digital technologies were concerned. When asked about the digital devices they owned 7 out of 10 answered that they owned a smartphone while the other 3 owned a simple mobile phone. Also 6 out of 10 owned a laptop or a desktop computer. As far as the daily use of Internet or ICT was concerned, 7 out of 10 participants used their smartphone daily for an average of 2 hours per day (the other 2 owned simple mobile phones) while the 6 who owned a laptop/desktop admitted to only using it when necessary and only for certain purposes (work, bank transactions, search of information). The monthly use of 8 out of 10 participants could be described as average to low. Additionally out of the 3 who didn't own a smartphone that could use the Internet or ICT, 2 responded that their nonuse was due to difficulties understanding the technology and 1 that they simply didn't like it since they constantly used their desktop for work.

The second thematic unit asked about the basic purposes the participants had for using ICT, the Internet and about the applications they used to achieve that. As far as the basic purposes of ICT and Internet use were concerned 8 out of 10 used them for staying up to date with the latest news, either local or global (the other 2 had no contact whatsoever with ICT), getting informed on medical issues, and in general in order to stay informed on whatever subject might interest them (1 participant did yoga online, 1 participant checked crypto currency and 1 used ICT to check sports statistics and play backgammon). 3 out of 10 participants used it for social media interactions, 5 out of 10 used email to communicate in their business or personal interactions, 6 out of 10 used free communications Apps and finally 2 out of 10 used them for banking transactions. The basic applications and sites that they used and which they gave as examples, were Google as a search engine (8 out of 10), Viber, Messenger and What's App to communicate free of charge (7 out of 10), Facebook and Instagram as far as Social Media were concerned (3 out of 10), YouTube for videos, several news sites (BBC News, Euronews etc.) and email applications such as Gmail (5 out of 10).

The third thematic unit had to do with social interactions and the experience the participants had or didn't have, on the use of ICT and the Internet for social interactions. 7 out of 10 participants admitted that they do not use Social Media for their interactions with others (2 of them because they did not use ICT in general and 5 of them because they consider that an inappropriate and impersonal way to communicate, since personal face to face or phone

interaction is always better). The other 3 admitted to using Social Media mostly to check what has been going on in their friends' lives and not to interact with them directly. Those particular 7 participants that used ICT though, admitted to using free communications apps for their interactions and all of them when asked, responded they preferred them because it gives you the ability to talk and message your loved ones whenever you wanted and wherever you were. The participants' use of ICT and the Internet for social interactions can be deemed a daily average, while they found social media interactions lacking but free communications' apps quite sufficient (7 out of 10).

The fourth thematic unit wanted to gather informations about the knowledge and skills of the participants' on the field of ICT and also wanted to investigate possible challenges faced in its use. When asked to describe their level of knowledge and experience in ICT 2 out of 10 participants answered that they were non existant, 7 out of 10 rated them as average to pretty good and 1 out of 10 had excellent knowledge and skills. As far as training received on ICT, 7 out of 10 had received no training (2 still don't use ICT while the other 5 have learned certain things through use and experience) and the other 3 had received training in the past (2 of them in an institution that teaches ICT literacy and 1 through lessons in their municipality). Furthermore, when the participants were requested if they faced difficulties or challenges in the use of ICT and the Internet, 10 out of 10 admitted to facing difficulties even the ones that have received prior training, since a lot of information tends to fade after a certain time of nonuse. As far as how they solved those issues and to whom do they tend to turn for assistance 10 out of 10 responded that they turn to a loved one (those with children to their children first) or to whoever has better knowledge than them be it a friend, an acquaintance or a technician. It should be noted that even those that have no smartphone, turn for assistance to experts even for something as simple as a top up. Finally, the participants were asked if they would consider support or assistance in ICT use helpful and if yes, what type of assistance or training would prove most useful to them. 9 out of 10 participants responded that they did consider support and assistance important and 1 participant who didn't answer thought it would be of no use for his age. Additionally the same 9 participants who answered that assistance would be helpful, thought that the best methods for them to learn would be someone teaching or showing them step by step how to do certain things, while personal training on their own time with someone with better knowledge or through the Internet with assistive videos (ex. YouTube), were also suggested methods of learning. All of them weren't opposed to being taught in an establishment for ICT literacy, though it should be noted that some of them didn't think it necessary for their age, but for a younger age group.

The fifth thematic unit talked about the importance of digital technologies for the individual. The participants were asked to share their opinion, or the opinion of people in their close environment, about the importance and the usefulness of having knowledge and skills in ICT and the Internet. The opinion of 10 out of 10 participants was that they were utterly important in order to go about day to day life. They believed that knowledge and skills were essential since everything nowadays requires digital technologies, from work to simple transactions or search

for information and that they were the future. But even though they thought them important, they also would describe them as a necessary evil and believed them more suitable for younger people, since they are the ones that use them and need them the most. That also coincides with the following question they were posed, where they were asked if ICT and the Internet played an important role in their daily lives or in the lives of their loved ones. 5 out of 10 answered that for them personally they didn't play an important role while all of them believed that they were of importance for their kids or grandkids or younger people in general, claiming they were content with what knowledge they had. In the end of this thematic unit they were asked what they thought were the advantages and/or disadvantages of ICT and the Internet. As far as the advantages were concerned 9 out of 10 believed they made things easier (ex. Internet banking), they provided information about almost everything everywhere fast, they made work easier (ex. working remotely) and in general they have many advantages they didn't know to specifically name. The remaining 1 didn't know the answer to that question. On the other hand as far as disadvantages go, 4 out of 10 talked about the loss of human interaction and physical activity, 3 out of 10 talked about exposure to dangers (ex. hacking, fake info, personal danger), 1 out of 10 talked about dangers to the health (ex. back and eye problems) and 2 out of 10 couldn't come up with a disadvantage.

The sixth thematic unit talked about vulnerability and social discrimination. When asked about their level of use and if they would like to benefit more from the opportunities offered by ICT and the Internet, 4 out of 10 participants said they would like to benefit more (ex. use of computer, learn internet banking and online shopping, use them with ease) while 5 were happy with their skills and 1 wasn't interested at all. Then they were asked if they thought their life was restricted in any way by their level of knowledge in digital technologies and if it did in what ways. 6 out of 10 believed their lives weren't restricted, 1 believed they were restricted in interacting with other people, 1 that their limited knowledge on the subject was restricting in itself, 1 that he wasn't restricted but wasn't assisted either and 1 wasn't interested at all.

On the seventh thematic unit the economic factors of ICT were discussed. On the first part the participants were asked if they believed that in order for someone to have access to digital technologies or the Internet, some kind of financial ease was required. 5 out of 10 answered that for certain some financial ease was required since technology is expensive, 4 believed that it wasn't necessary since everyone has access to at least one digital device and prices range and 1 didn't know the answer but assumed they were required. On the second part, the participants were asked if they considered Internet transactions safe and if they believed Internet banking, online shopping etc. were safe to perform. 4 out of 10 answered they believed that they were safe to a certain point since nothing is completely safe and you need to be careful, 3 said they were reluctant and unsure since they keep hearing about fraud and data theft, 1 said they were suspicious of them since they had some issues in the past and 1 said that they feel safer with only simple transactions such as checking a bank statement and nothing else. Now as far as the benefits and the risks of such transactions are concerned, as benefits 9 out of 10 stated the fact

that they are quick and fast with little difficulty and easy access, 1 didn't answer since they had no knowledge. And as risks 2 out of 10 claimed there weren't many otherwise no one would do them, 7 claimed that fraud and account theft were risks and 1 didn't answer since they had no knowledge.

The eighth and last thematic of our interview was regarding the participants' ability to recognize digital threats and dangers. In the beginning they were asked if they thought that the Internet might cause any kind of harm or damage and on that 10 out of 10 answered that it could. 8 out of 10 said that the major dangers and the major harm that can be caused is to children, since the anonymity of the Internet can hide the most dangerous of predators. Additionally 2 out of 10 talked about economic harm through theft and harm to the health due to overuse and 1 talked about the harm of being monitored constantly. The next question was about the search engines and the apps they use to scroll the Internet and if they check their reliability. On that subject 8 out of 10 answered they didn't, while the other 2 had no access to the Internet so they didn't answer. Furthermore, they were asked if fake news or invalid information have ever come to their attention while on the Internet. On that 4 out of 10 said that they hadn't but that they probably existed so you need to be careful and the other 4 said that they had come to their attention and in a large amount also, while the 2 who didn't have Internet access came across them on other media like the news. Now as far as the precautions they take while using the Internet, 4 out of 10 said they take no precautions, 3 took only simple precautions such as a password, 1 used more advanced solutions (firewalls, cleaned cache etc) and the other 2 had no knowledge since they didn't use digital technologies. It should be noted that the 7 who took no to simple precautions, claimed they didn't use the web for anything special and that they immediately left when entering any suspicious pages. The final questions of our interview was regarding the participants' knowledge about certain phenomena such as identity theft, fraud and "electronic phishing". 7 out of 10 answered that they had knowledge of these phenomena while the other 3 answered they had little to no knowledge about them. But it was noticed that the knowledge was superficial and not in depth by their answers that were vague.

3. Survey with Professionals and Family members

3.1 Methods

- ### Study Design

For our survey we used a quantitative design.

- ### Participants

Our sample consisted of 31 (N=31) family members and professionals (physicians, clinical psychologists, clinical neuropsychologists, pneumologists, pathologists, gerontologists and nursing staff) working with older people. Of them, 4 were 18-24, 15 were 25-39, 5 were 40-60 and 7 were 60 plus years old. Out of them 23 were women, 7 were men and 1 chose not to state sex. All of the participants were of Greek Nationality and they all presided in Greece. Among the health care professionals, 60% of them worked in their sector from 10 to 20 years, 20% for more than 20 years and another 20% for less than a year.

- ### Tools

An online survey was conducted. The survey was consisted of 6 sections. Some of them had questions that were rated on a Likert Scale, while others were multiple choice answers or free text answers.

- ### Procedure

Due to the COVID-19 difficulties and restrictions, all participants were contacted by email or phone and were informed on the purpose of the study. They were then asked if they would like to participate in it and whoever agreed was sent a link to the online questionnaire on Google Forms. They then filled the questionnaire and submitted it online. The survey questionnaire was also disseminated through social media.

- ### Ethics

All participants were informed prior their participation through Google Forms and they consented in taking part in the survey. Participants were informed that all their data was safe and that no personal information of theirs would be exposed to the public. They also were informed of the procedure in case they wanted to withdraw their participation.

3.2 Results

The professionals and family members (N=31) who took part in our survey, completed the first section when giving their consent to participate and then moved to sections 2 and 3 where they completed some demographic questions. They then moved to sections 4 and 5, where they were asked about the elderly people in their lives. All 31 responded that they had older people in their immediate family. Their ages ranged from 65 to 97 years old and the majority of them were women (on a ratio of 2:1, women to men).

The last section was section 6. For starters the participants were asked if the elderly in their lives owned any digital devices, 17 out of 31 responded that they did while the other 14 the opposite. The ones who responded that they didn't, stated as reasons (Chart 1) the lack of skills (53.3%), insecurity or fear (20%), lack of interest (20%) and some other reason (6.7%).

As far as how often they used digital devices (Chart 2), the majority of the respondents claimed that their loved ones Never/ Hardly Ever use them (54.8%), while fewer used them daily (35.5%), even less monthly (6,5%) and very few weekly (3.2%).

Chart 1. Reasons for Nonuse of Digital Devices

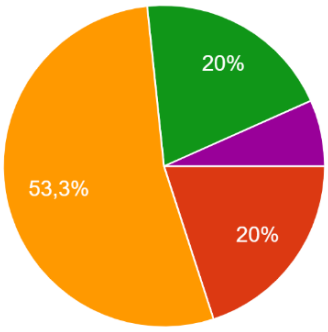
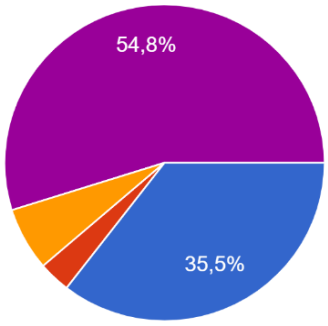


Chart 2. Frequency of Use of Digital Devices



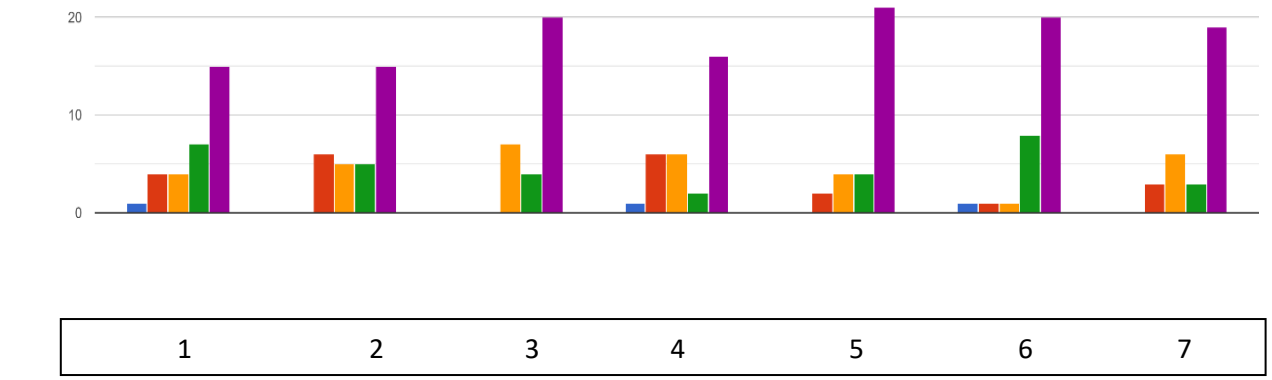
In the following chart (Chart 3) we can see the answers to the question of how the participants would rate the knowledge of their loved ones on certain ICT subjects on a scale from 1 to 5 (where 1 = completely agree and 5 = totally disagree).

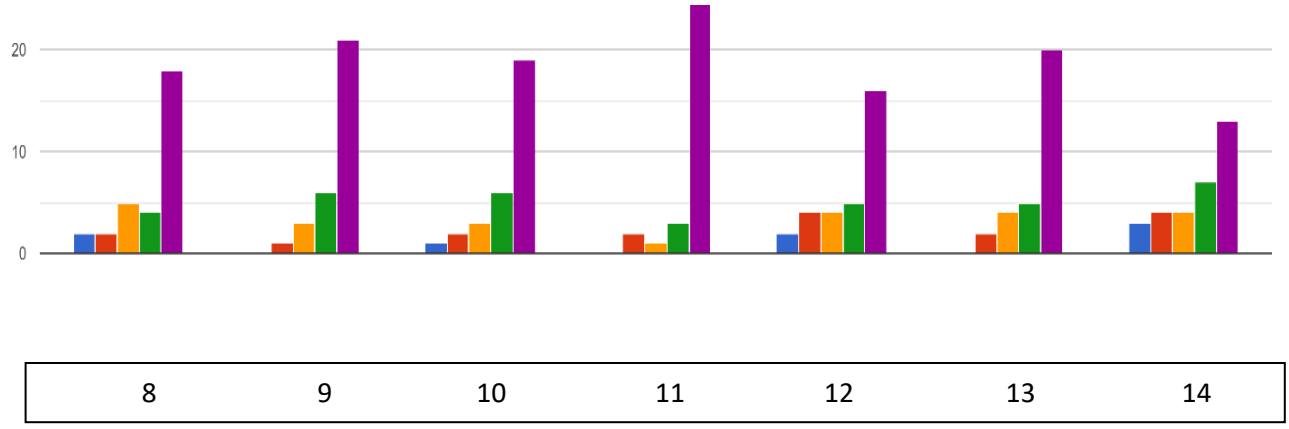
When asked if they can solve routine issues on their own (Histogram 1) 48.39% of participants responded that they completely disagreed. On the subject of seeking support while facing an issue (Histogram 2), again 48.39% answered they completely disagreed and other answers varied. When asked if they can solve the problems that come up when using digital technologies (Histogram 3) 64.52% completely disagreed. When asked if the elderly could save

and store required info (Histogram 4) or if they could install and configure settings on their devices (Histogram 5) again the vast majority (51.61% and 67.74% respectively) completely disagreed. The same applied on the subject of applying simple changes on certain apps they are using (Histogram 6) and choosing a digital tool that covers their needs and evaluating its effectiveness (Histogram 7). Most of the professionals completely disagreed (64.52% and 61.29% respectively).

As far as if the elderly are thought to be able to discern the validity of information online (Histogram 8), 58.06% completely disagreed. On the subject of keeping copies of their data (Histogram 9) and of installing security measures on their devices like firewalls (Histogram 10), once more the majority completely disagreed (67.74% and 61.29% respectively). Now as far as being able to manage their firewalls or security settings on their devices (Histogram 11) the staggering majority replied they completely disagreed (80.65%). The following questions were regarding their knowledge of password or data theft (Histogram 12), their use of different passwords for protection (Histogram 13) and their knowledge about possible dangers online (Histogram 14). The respective responses were once again leaning on the completely disagree side (51.61%, 64.52% and 41.94%).

Chart 3. ICT Knowledge of Elderly People





In the following questions the participants were asked to rate the degree in which the elderly in their lives knew the opportunities presented by ICT (Chart 4). With a percentage of 6.5% respectively they responded they found it completely sufficient and sufficient. Another 22.6% wouldn't rate it as either sufficient or inefficient, 45.2% rated it inefficient and finally 19.4% found it completely inefficient. Also they were asked the degree to which they took advantage of the aforementioned opportunities (Chart 5) and 22.6% rated it as sufficient, 25.8% wouldn't rate it as either sufficient or inefficient, 22.6% rated it inefficient while the remaining 29% believed it completely inefficient.

Chart 4. Knowledge of ICT Opportunities

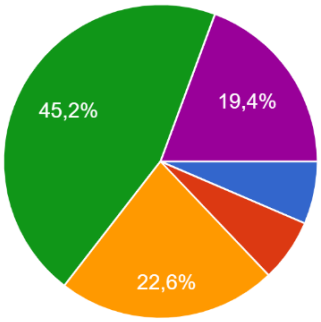
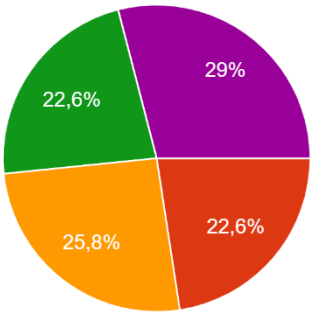


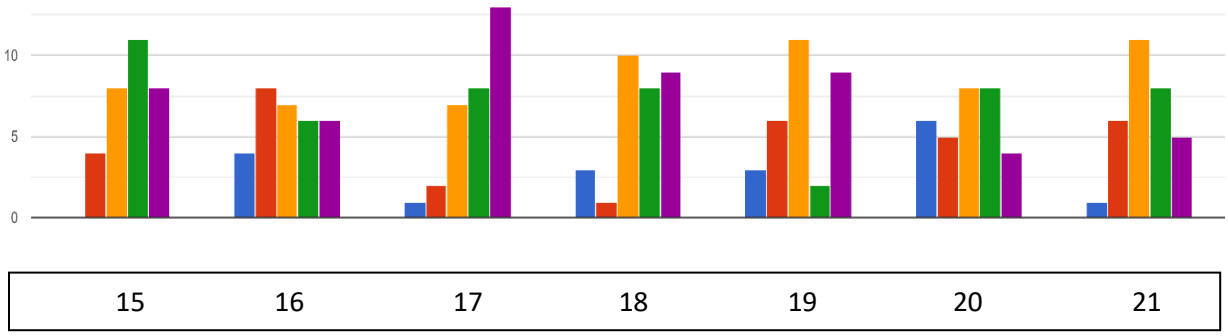
Chart 5. Degree of Taking Advantage ICT Opportunities



The next question had to do with the participants' beliefs about whether the elderly's lives were affected by their level of use of ICT. Almost half of them (48.4%) replied they weren't sure or that they didn't know, while 35.5% replied yes and the remaining 16.1% no.

The following questions were regarding a program that promotes and improves ICT literature for the elderly. The participants were asked to rate on a scale of 1 to 5 (where 1 = not important and 5 = extremely important) certain thematic units of the program (Chart 6). The first unit (Histogram 15) asked if it was considered important to improve older people's skills on Internet use such as browsing and using search engines. Everyone considered it important just on different levels (35.48% really important, 25.81% respectively important and extremely important and 12.9% relatively important). Next they were asked about the importance of knowing how to manage and store digital information (Histogram 16). The majority of professionals thought it was important on varying degrees (25.81% relatively important, 22.58 important and 19.35% very and extremely important respectively) while only 12.9% considered it unimportant.

Chart 3. Thematic Units of ICT Literacy Program for Elderly People



The next thematic unit involved the knowledge to perform digital transactions online (Histogram 17), where the vast majority (90.32%) considered it from important to extremely important and only 9.68% thought it unimportant or relatively important. Furthermore they were asked their opinion on the importance of learning to protect their digital devices and personal information online (Histogram 18), where again the majority (87.1%) rated it from important to extremely important and the remaining 12.9% rated it unimportant or relatively important. Also they were asked the importance of learning to recognize and solve on their own technological issues (Histogram 19), where 70.97% would rate it from important to extremely important and 29.03% would rate it unimportant or relatively important.

The last two thematic units involved the knowledge of the elderly to use social platforms (Histogram 20), where 35.48% thought it unimportant or relatively important and 64.52% considered it important to extremely important and the knowledge to use digital tools and applications (Histogram 21), where most answers ranged from important to extremely important (77.42%) and 22.58% believed it unimportant or relatively important.

In continuance to the prior question the participants were asked if they would like to propose another thematic unit that could be included in a program that promotes ICT literacy for older people. The majority didn't provide any extra input, thinking the basics were covered (24 out of 31). The proposals that were made were teaching the elderly basic English in order to be able to use digital technologies, also to train them in particular applications, the use of open source coding and finally the use of a medical app in case of a medical emergency.

Additionally we asked the participants what they believed were the major issues that the elderly were facing while trying to improve their knowledge and skills on ICT. The answers varied but it was clear many participants believed it was lack of skills, knowledge and familiarity with ICT as well as difficulty of understanding of new technologies and in certain cases lack of education (15 out of 31). Also it was contributed to fear, bad communication and insecurity as well as reluctance or refusal to adapt (10 out of 31) but some believed it was due to lack of proper

support and programs that promote ICT literacy for older people, due to their poor memory or for lack of resources (6 out of 31).

Finally, in the last question the participants were asked what type of program could prove most efficient in helping the elderly learn and adopt ICT skills as well as familiarize themselves with digital technologies. The following propositions were made:

- Seminars
- Practical lessons by trained instructors
- Lessons by a loved one or a carer
- Basic ICT English training
- User friendly applications and programs designed for their age

In all of the above it was proposed that the instructors be specifically trained in dealing with older people. The seminars should be easy and slow paced with a lot of repetition. They should also be accessible even through gathering places for the elderly. Most of all the elderly should feel safe, cherished and supported through the entire process of learning, no matter if they are taught by an instructor or by a loved one. Finally, all teaching methods should be user friendly and they should also be provided with hard copies and material they are familiar with to help them acclimate faster.

4. Social Experiment

4.1 Methods

• Participants

Our sample consisted of 10 elderly people ranging from the age of 65 to the age of 73. Our sample (N=10) was evenly distributed (5 elderly males and 5 elderly females).

• Tools

We conducted the social experiment with a list of 10 news headlines.

• Procedure

Due to the COVID-19 difficulties and restrictions, the social experiment was conducted immediately after the interviews. All of the participants were given the consent form prior to the interviews. After the interviews, they were informed about the purpose of the social experiment, the agreed to proceed, the experiment was conducted and in the end all participants were thanked for their participation in both the interview and the social experiment and were then debriefed.

• Ethics

All participants were informed, that if at any point during the experiment they felt uncomfortable or uneasy, they could withdraw immediately or ask to stop. Before we started they were given time to feel comfortable and ready to start and they were informed that in case they needed clarifications about the questions they could always ask. They were also told there are no right or wrong answers. Additionally, they had already agreed to be taped on a mobile device by giving their consent on record. Participants were informed that all their data was safe and that no personal information of theirs would be exposed to the public.

4.2 Results

In the following table (Table 1) we can see the answers given by the participants.

The fake news headlines were the following:

1. Studying Ancient Greek reprograms the brain of dyslexic children.
2. Police Notice – what info we shouldn't post online and why.

3. The children of women who take antidepressants are in danger to suffer from autism.
4. Research "death" lab in Georgia, USA discover the Russians.
5. The airport of Houston, Texas was flooded due to severe weather conditions. Planes were immobilized.

The real news headlines were the following:

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

Table 1. Social Experiment Answers by Participant

		Answers												ACCURACY
		Fake News						Real News						
Participant	Gender	1	2	3	4	5	%	6	7	8	9	10	%	
001	M	R	F	R	F	R	20%	R	F	R	R	R	40%	60%
002	F	R	R	F	F	F	30%	R	F	R	F	F	20%	50%
003	M	F	R	R	F	F	30%	F	F	R	F	R	20%	50%
004	F	F	R	R	F	R	20%	F	F	R	R	R	30%	50%
005	M	U	R	R	U	R	0%	F	F	R	U	R	20%	20%
006	F	R	F	F	F	R	30%	R	F	F	R	R	30%	60%
007	F	R	F	R	F	R	20%	R	R	R	R	R	50%	70%
008	F	R	F	R	F	R	20%	F	F	F	F	R	10%	30%
009	M	F	F	R	F	R	30%	F	R	R	F	R	30%	60%
010	M	F	R	R	F	R	20%	R	R	F	F	R	30%	50%

*Note: M = Male F = Female

R = Real F = Fake U = Unsure

As shown by the table above all participants had difficulties discerning between real and fake news. Their accuracy was at an average of 50%, while the lowest scores were 20% accuracy and the highest 70% accuracy. It should be noted that the participants who scored the lowest were the ones that didn't use nor had access to digital technologies, so they mostly relied on the TV news for their answers.

The participants had the most difficulty spotting the fake news headlines on an average of 22% accuracy, while on the other hand the real news headlines were more easily discernible and their success was on an average of 28% accuracy.

On headline 1 only 4 participants spotted the fake news (40% accuracy), while on headline 2, there were 5 participants who spotted them (50% accuracy). Headline 3 had the lowest accuracy results (20%). On the other hand, headline 4 had the largest accuracy (90%) and most participants noted that it was definitely fake since it was farfetched and extreme. Finally, headline 5 also had the lowest result as did number 3 (20% accuracy) since no participant apart from 1, paid attention to the last part of the headline about airplanes being immobilized.

On headline 6 there was a 50% accuracy, and on headline 7, only a 30% accuracy, since most participants didn't believe such news online would be real. Headline 8, got a 70% accuracy and most participants had heard something about it and number 9 scored a 40% accuracy because many believed it impossible. Now the final headline, 10, scored the highest (90% accuracy), with both male and female participants believing it possible to buy weapons online, since they believed nowadays you can buy and sell everything online.

It should be noted, that this particular part of our research proved to be the most difficult, since participants had difficulty understanding the whole process itself. The headlines needed to be repeated several times to each participant and even though they were made to feel comfortable and put at ease, they were stressed to share their opinion afraid they might make a mistake and that is the reason they weren't pushed to provide detailed reasons and answer why they chose their particular answers for every headline.

5. Discussion

Based on all of the above we can conclude that the "Digital Divide" exists in our country as well and that in certain areas it is getting bigger and bigger, a fact that coincides with previous research findings (Cresci & Jarosz, 2010). The COVID-19 pandemic has caused a lot of difficulties for the elderly and many of the activities that would normally happen in person began taking place digitally and day to day life started getting more and more digitalized (Van Jaarsveld, 2020). Information and communications literacy are starting to become essential in their leading affluent lives (Jun, 2020) and they are admitting it as well, since as we can see they would like to benefit more from the opportunities that ICT can provide them.

Study shows, older people unable to use online technologies display characteristics such as low education, low income and lower cognitive functioning (Andenberg et al., 2020), results also supported by the beliefs pf professional carers of the elderly. But that does not apply to everyone since experience and frequent use of technologies by older people might produce different results (de Almeida et al., 2015) and people who are more accustomed to their use have more positive attitudes towards them (Seifert & Schelling, 2018). All of the above coincide with our qualitative research findings since our participants had at least high school education and came from different economic backgrounds, while those who were more accustomed to them did use them more frequently, at least daily.

On top of all that the family structure has changed in recent years and older people no longer live with their children. As a result they cannot always depend on assistance from their loved ones and they have to tackle day to day activities, including digital ones on their own (Daniele et al., 2019). Using a laptop, a computer or a tablet can prove to be a challenge for older users, even though it can be really helpful in their interactions with family (Scheepens et al., 2018). Both the interviews with the elderly and the online survey with the professionals and family members has produced results that show, that even though the elderly are no longer living with their loved ones they mostly rely on them to assist them when they have difficulties with technology and when they need to learn certain new things regarding it. Additionally, they mostly use technology such as a smartphone and not a laptop for their basic needs but also free communications apps to constantly keep in touch with their families even though they might be living far away from each other are equivalent with those of previous studies (Berg et al., 2017; Karagianni, 2018).

Through their responses we can conclude that most concerns for seniors can be found on how to close the digital divide, how to get access and how to maintain privacy intact which are the same as those of a previous study (Shrewsbury, 2002). For example their concerns are ranging from security and privacy to the public's perception of them (Hornung et al., 2017) and we can

attest to that, since they are scared to perform several digital transactions, they aren't well informed on the digital dangers that exist, they are afraid of the anonymity of the Internet and they have little or no social media usage since they consider it impersonal. All of the above are in line with the opinions of participants who take care or interact with older people. But also it is of great importance for them to stay digitally engaged and address their needs properly (Olphert & Damodaran, 2013), as we saw from their use of search engines to stay informed on matters that interest them.

ICT can improve the lives of the elderly as easily as it does for the younger population and the same applies for their health since it can assist in promoting it (Zhao et al., 2018) and we saw that digital means were used by the participants to exercise while on quarantine with positive results as previous study has shown (Mehra et al., 2019). On top of that one of the most common issues regarding the health of the older population, are the nonadherence and the errors in medication and it was proposed by the participants on our survey to use an app that would assist them or serve as an emergency panic button in case of need. All the above coincide with a study that has produced results that show such an application, has significantly improved adherence to medication intake even for older individuals with complex regiments but also for older people with no experience in the use of ICT (Mira et al., 2015). In order for the apps to be successful though they have to be tailored to each individuals regiment and needs (Herrmann et al., 2020).

As an addition we produced results that showed older people would be open to learning about ICT and improve digital capacity through several forms of education (Jun, 2020). For example a simple self-learning application (Toyota et al., 2014) as they also suggested, or a person with better knowledge demonstrating certain things. Another study has provided us with an insight on how approaching the community of elders as a whole and develop programs, applications and technological interfaces easily accessible, usable, beneficial and convenient for that community can go a long ways to developing respect, communication, trust and foremost mutual understanding between the old and the young populations (Cresci & Jarosz, 2010). And that was noted on our survey when the participants were asked what they would propose in order to assist the elderly to improve in ICT. Finally, as proposed, older people should be supported and encouraged in their ventures to learn and improve their ICT skills. They should be taught slower, with activities and examples as well as training material focused on older students as shown by both the interviews and the survey (Papoutsi, 2019).

All the above suggestions are based on the fact that our results show that the elderly are already making leaps to bridge the Digital Divide, they do want to become more affluent in digital technologies as they consider it the future and they support learning as a way to achieve that. Even the ones that don't use technology, either from lack of understanding or from technostress (Nimrod, 2018), have certain knowledge about them, while all of them see the benefits of digital technologies in everyday life.

- Limitations

The limitations of our research were that many of the participants had difficulties understanding the questions posed and needed further clarifications or simplifications. Also due to the pandemic it was difficult to reach some of them through digital means and some of the interviews conducted by phone proved a bit difficult. It has been noted that the majority of the elderly prefer face to face interactions since they find them less impersonal.

- Future Research

For future research we would propose the matter of elderly health be examined further under the scope of digital technologies, since it wasn't covered by our questionnaire and our field research produced many and important results on the subject as well as the survey with the professionals and family members.

6. Conclusions

Based on our desk and field research, as well as the survey with the professionals and family members in the field of elderly care and the social experiment, we conclude that the elderly are really interested in learning new skills as far as ICT is concerned, but also in improving them. They are actively trying to bridge the Digital Divide, become part of new technologies and connect with younger people. The only issue presented and that is really interesting to note, is that even though they aren't opposed to learning and improving, they are under the impression that it is not something that directly concerns their age group since as they said "it is not for us but for the younger people". Here we can clearly see a very clear division between what they consider to be necessary for themselves as opposed to that for younger people. We could assume that the particular phenomenon is a manifestation of the Digital Divide, which is directly linked to older people's opinion that digital technologies aren't a required knowledge for their age group and their situation in life.

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