

# *The relevance of the new technologies for seniors and their next of kin.*

## *Lessons learned from a survey*

### **Authors:**

Cosmina Paul<sup>1</sup>, Mircea Dan Marzan<sup>1,2</sup>, Luiza Spiru<sup>1,2</sup>

1. Ana Aslan International Foundation

2. Carol Davila University of Medicine and Pharmacy

**Abstract:** Recently, a number of new technologies have emerged with the aim to offer innovative and efficient products and services to support seniors in their daily life and to prolong their independency at home. This study undertakes a questionnaire-based survey method and collect 105 responses over the months of May and June 2022. We have drawn 5 lessons from the survey analysis: 1) Great family support is associated with a higher request for technology care; b) There is little knowledge and usage of assistive technology, c) The relevance of technology depends on the psychological status of the senior, d) Conducing and limiting factors in the consumer behaviour, and e) Gender perspective in choosing technology. Relevant conclusions related to the technology inequalities, gender mainstreaming in technology adoption by seniors and the psychological status as a key determinant factor in technology requirements, are discussed.

### **1. Introduction**

Technological innovation would continue to accelerate. As the population grow older, it is expected that technology would answer to the quest of care due to the increasing number in requirements for ageing well and independently at home. Though, the adoption of technology is likely to continue to be slow in the case of care where technology requires complex new skills, is expensive and ask time for optimal and effective usage. Identified as the 'second technological gap' (Friemel, 2016), more is to be known about the needs and requirements of the senior population.

### **2. Literature review**

Across Europe, the growth of the usage of new technologies for seniors is increasing and one area that developers and researchers have not really discussed is the seniors' and their families' points of interest into the new technologies in the countries where strong family culture still exist. And that is the case of Romania too, sharing a culture which is prone to keeping caring within family system. Such attitudes are associated with a reluctance to elect residential homes and formal care but also, due to their underdeveloped care and health ecosystem, they are less inclined to prevention. Although, due to globalization and to the increasing avenues of employment opened to women, an inter-play between formal and informal care is developing. Moreover, gender perspectives and psychological factors are less accounted, even though research findings show their relevance in the technology adoption. These are in line with other research findings that emphasize the importance of accounting for the psychological well-being, such as the gerontographics studies that show that older adults would manifest similar behaviour based on the type of aging experience (Kavandi and Jaana, 2020).

However, we know a lot about innovation and assistive technologies through a top-down approach of what can be of relevance to people aged 55+, referring here to young seniors and their next of kin, but we rarely employ a bottom-up approach. Therefore, we know little about

what are the needs and preferences of people living in family-oriented cultures and to what extent they accept and adopt technologies for their seniors?

End-user requirements is an intricate and complex process and the models for the acceptance of the technologies (Venkatesch, 2003; Paul et al, 2019; Sun, 2020) by this segment of population have a limited predictability and accuracy. That is because, on the one hand, the people aged 55+ are a much more diversified segment in terms of needs and requirements compared to the much younger segments of population, and, on the other hand, that is due to the rapid advancements in technologies due to the governmental and businesses' support of innovation, which creates needs or come on the market with disruptive technologies which could not have been foreseen (Moschis, 2019; Paul et al, 2021).

However, given the rapid growth of this population as well as the potential that the new technologies hold for them, it is a subject worth consideration. This article discusses the interest into the new technologies by a national random survey of senior consumers and their next of kin.

### **3. The Methodology**

We have taken a questionnaire-based survey method, which is part of the Positivism research approach, along with the explanatory design. The data is collected through a semi-structured survey questionnaire. The survey questionnaire was circulated to respondents electronically through internet and traditional hard copies, which have been handled to a senior meeting which took place in Bucharest on May, 2022. For electronic distribution google forms have been used and no personal data have been collected. However, each participant has been properly informed on the purpose of the research.

#### **3.1. Demographics analysis.**

105 participants took part in the survey. The youngest person is 38 and the most advanced age is 87. 78% are women and the 21% are men. 44% are living alone and, out of them, 50% are having a relative within a maximum of 30 minutes reach.

#### **3.2. The Survey Questionnaire**

The present study aims at presenting the results of a survey which comprises 105 participants at the level of Romania who express their interest into a new technology and discuss their adoption and interest for usage of other new technologies which are supportive for seniors. The survey is part of an EU research and development project for Active & Assistive Living (AAL), which is called AAL4All (A4A) and about which more can be read here: [www.AAL4All.com](http://www.AAL4All.com).

The objective is to develop a non-stigmatizing and non-wearable remote care monitoring solution based on plug-and-play room sensor devices and voice interaction device. It will be able to notify you if something does not seem to be OK from a normal behavioural pattern of the care-receiver (the older adult). In the survey we refer to the solution as 'A4A device'. In this survey we refer to the solution as 'A4A device'.

The questions addressed in the survey and discussed here, are the following:

How useful is the A4A device, for you or for somebody you care for (e.g. your parents)?

To send a notification to a relative or carer if you (or your care-receiver) did not get out of bed by a specific time in the morning

To know the Activities of daily living based on the sound monitoring (eating, toileting, etc.).

Proactively generate an ALARM to the sounds "HELP" or repetitive beats which might mean "HELP" to a next-of-kin or professional carer

Identify the abnormal movement behavior (for example, overnight or high toilet frequency  
To switch off and on the device as you (or your care-receiver) want.  
Early identification of depression or anxiety.  
Early identification of cognitive decline.

Did you or the care-receiver adopt any technology to support (her/his) aging/ independency/ safety?

What would make you decide to buy a device based on sound monitoring such as the A4A device?  
Please rate on a scale from 1 to 5 where, 1 is at least important and 5 stays for very important, the following:

What factors might make you NOT want to buy it? Please rate from 1 (least important) to 5 (very important)

#### **4. Lessons from the survey**

##### **Lesson 1. Great familial support is associated with higher request for technology care**

Intuitively, the majority of the participants, both care-givers and care-takers, would choose alarm technologies which alert the care-taker in case of falls and/or lack of movement. Moreover, the vast majority of those who live with a partner or with a relative find of great relevance sending an alarm in the case that abnormal behaviour, such as lack of movement, is recorded.

Counter-intuitively, more of those who live with a partner or a member of family, compared to those who live alone, would choose an alarm technology. Some explanations from a long range of hypotheses are the following:

- a) those who do not live alone still spend most of the day alone due to the exhausting modern schedule which leaves little time with the dear ones,
- b) those who live alone, would adopt an alarm technology only if they have a care-giver within reach,
- c) they remain comfortable relying on themselves

##### **Lesson 2. There is little knowledge on assistive technology**

Familiarity and usage of the technologies which support active ageing stay low. 79% of the participants did not adopt yet any technology which assist them in staying safe and ageing independently. The reasons listed in the survey relate to lack of information about relevant technologies or familiarity with technology (Czaja and Schulz, 2006; Bae et al, 2020).

From those one fifth of the participants who have adopted a new technology: mobile phone, bracelet and technologies for visual and auditive impairments are the most frequent ones.

##### **Lesson 3. The relevance of technology depends on the psychological status of the senior**

The psychological status factor of the care-taker adds predictive power. About half of the participants found of equal relevance the alarm system (in case of accidents/fall detection) as the early identification of mental or cognitive decline.

Those who are psychologically well, compared to those psychologically unwell, would be more interested in the early identification of anxiety and depression (61% compared to 52%).

While those who are psychologically unwell, compared to those psychologically well, put more emphasis on alarms (77% compared to 56%) as well as identification of abnormal behaviours during night-time (50% compared to 32%).

Irrespective of their psychological status (either psychologically well or psychologically not well) caregivers and care takers equally appreciate the relevance of sending a notification in

case of abnormal behaviour, such as falls (58,7% compared to 59,3%), controlling the device or monitoring of the daily activities (47%).

#### **Lesson 4. Conducive and limiting factors in the consumer behaviour**

The price is the most important factor in the decision for not buying a product, followed by false alarms. The simple explanation is that any inaccuracy would overload the care giver and stress the user and, therefore, the accuracy weight much in deciding not to buy a technology.

However, for those psychologically not well, the confidentiality of personal data or the reluctance of being monitored matter less compared to those psychologically well (41% compared to 17%).

#### **Lesson 5. Gender perspective in choosing technology**

Compared to women, men think that they themselves or their care-takers have a lack of security, social isolation, cognitive decline and self-care. Hence, 60% of men, compared to 21% of women, think that they themselves or their care-receiver does not feel safe, worry about the care-receiver depression, anxiety and isolation (60% compared to 30%), fear care-receiver cognitive decline (70% compared to 29%) or nutrition and dehydration (60% compared to 29%).

Associated with age, gender also shows that there is a difference in the consumer behaviour: men tend to care less about data confidentiality and monitoring, compared to women.

### **5. Conclusions**

The present study shows that the usage of the new technologies for seniors and their next of kin increases social inequality as those who first benefit from technological advancements would be those who have more family support. Therefore, the quest for support of those living alone stays unanswered.

By employing a gender perspective and accounting for the psychological status of the seniors, we find that the relevance of the new technologies differs significantly. As women represent an expressive majority in the responsibility of care, men tend to worry more about the safeness and health status of their care-receivers and to rely more on the new technologies, while the care-taker's psychological health is a key factor in deciding the requirements and expectations from a new technology.

### **Acknowledgements**

This work was performed in the frame of AAL4All (AAL-2021-8-164-CP) funded by the AAL Programme and co-funded by the European Commission and the National Funding Authorities of the partner countries.

### **Bibliography**

Bae, Hyeyoon, Sang Hyun Jo, and Euehun Lee. "Why do older consumers avoid innovative products and services?" *Journal of Services Marketing* (2020)

Czaja, Sara, and Richard Schulz. "Innovations in technology and aging introduction". *Generations* 30.2: 6-8. (2006)

Friemel, Thomas N. "The digital divide has grown old: Determinants of a digital divide among seniors." *New media & society* 18.2: 313-331. (2016)

Kavandi, H. and Jaana, M., 2020. Factors that affect health information technology adoption by seniors: A systematic review. *Health & social care in the community*, 28(6), pp.1827-1842.

Moschis, George P. *Consumer Behavior over the Life Course Research Frontiers and New Directions*. Springer Nature, (2019)

Paul, C. Sterea, A., Mârzan, M. Economidou, A., Iztok, Garleanu, A. 2019. Why Do Seniors Accept or Reject New Technologies? BRAIN INFO 2019, The Fourth International Conference on Neuroscience and Cognitive Brain Information (2019)

Paul, Cosmina, and Luiza Spiru. "From Age to Age: Key Gerontographics Contributions to Technology Adoption by Older Adults.", ICT4AWE, 2021: International Conference on Information and Communication Technologies for Ageing Well and e-Health (2021)

Sun, Yang, et al. "Stress and depression among Chinese new urban older adults: A moderated mediation model." *Social Behavior and Personality: an international journal* 48.9: 1-10. (2020)

Venkatesh, Viswanath, et al. "User acceptance of information technology: Toward a unified view." *MIS quarterly*: 425- 478. (2003)