Do Elderly People Enjoy the Fruits of Estonia's e-Health System?

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Abstract: The article focuses on the ability of senior citizens to use the highly acclaimed Estonian e-health system. Estonians are heavy internet users and are known for their innovative e-solutions in the world. E-health is a prime example of such state-of-the-art programmes set out to improve public health. The people who need health related information the most are the elderly. But do they have access to the internet and can they find relevant information and cope with e-health solutions? Acquiring a computer or subscribing to internet service could present a major financial challenge for them. A pilot study, which is the initial step to a more comprehensive research, revealed based on a focus group interview and in-depths interviews with seniors that elderly often lack the skills and experience necessary to search for online health information as well as cope with e-health solutions. Thus, the wholesome public image of Estonia's e-success seems not to always correspond to the reality. This paper puts the much-appreciated IT solution into a broader perspective and, instead of the lavishly praised e-health applications, focuses on outlining the serious drawbacks of the digital divide and exclusion of seniors from the digital services.

1 INTRODUCTION

Estonia, sometimes called the "European Silicon Valley", is often referred to as one of the most advanced countries in the field of information technology in the world where citizens have digital access to all public services including legal, education, and other Governmental Services (E-Estonia, 2015; Bau, 2017). A prime example of such state-of-the-art programmes of the Estonian e-Government is e-Health: an electronic healthcare system closely linking health databases to other government systems and offering online access to healthcare services. But can all Estonians, including the elderly, benefit from it?

Digital healthcare services are particularly important in the context of population ageing. This is especially relevant to the Baltic states with declining fertility rates and shrinking population. Estonia, which is the northernmost and smaller of the Baltic States, has a population of just over a million. The share of senior (65+) citizens in Estonia is about European average (19%) and, what's even more positive, is that they work longer and are better educated than their European peers (Eurostat, 2018). The sad side is that their participation in society is meagre and their health is poor (Liiva, 2015).

The e-health system could play a vital role here by enabling the elderly to make a doctor's appointment online, to obtain digital prescriptions and to access their health data e.g. referrals and test results. However, given the fact that Estonia registers by far the worst results in the EU when it comes to old-age poverty (Tambur, 2017), acquiring a computer or subscribing to internet service could present a major financial challenge for them. The European Commission has repeatedly drawn attention to the problem that about 40% of people aged 65 and over are at the risk of poverty in Estonia (European Commission, 2018).

The ones who need health related information and the e-health care services most are the senior citizens. Thus, it is imperative to study whether and how they can employ the e-health programme and other online resources offering health related information. The question arises whether the elderly have access to the necessary IT-solutions (computer, the internet) to fully utilise the e-health and other e-systems, and secondly, if they have no prior experience with computers and the internet, then how can they make the most of such e-services (i.e. are they willing and

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competent enough to handle and benefit from the system?)

Due to the under-representation of the elderly among computer users, surveys using online surveys cannot be considered sufficient (Ainsaar & Soidla, 2018). Thus, besides quantitative approach, qualitative approach should be used to receive more information from this age group. Even though digital issues are very important to Estonia, it is somewhat surprising that there is less academic research in this field. There is lack of qualitative studies focusing on digital gap in e-government issues. This study attempts to diminish the gap.

The article focuses on the ability and willingness of Estonian senior citizens to use the highly acclaimed Estonian e-health system. First, the article provides a short overview of Estonia's e-health system and the use of internet by elderly on the basis of literature and previous research. Secondly, a pilot study was carried out using methods of in-depth interviewing and a focus group interviewing to reveal Estonian seniors' willingness and problems to use the Internet as source of health information and the e-health system.

It is necessary to study how elderly people feel about the contemporary e-systems as e-health to make this kind of systems more effective.

The rest of the article is organized so that the following section will give a brief overview of the e-Estonia and its e-services including e-health system followed by a short introduction about exclusion of Estonian elderly in e-services. As follows, methods used of the qualitative pilot study will be introduced. The paper ends with the results and summary.

2 ESTONIA'S E-GOVERNMENT AND THE E-HEALTH SYSTEM

Estonia, the country that gave birth to Skype and where internet usage among citizens' amounts to 89%, has ambitious plans with respect to digitization (Eesti Statistika, 2018a; Lufkin, 2017). Since the 1990s, the small nation has been striving towards a 100% digitized society by putting even its entire government online (Lufkin, 2017). Thus, no wonder it is sometimes said that Estonia is seeking to create an ideal information society posing a model for other countries for how a government can successfully move of its services to an online platform (Connectedhealth, 2017; e-Estonia, 2015; Digital agenda, 2014).

Its IT success stories are e-solutions, which speed up inter-agency procedures and increase opportunities for communication between the citizen and the state (Minifacts, 2017). When Estonia started building its information society about two decades ago, there was no digital data being collected about Estonian citizens. The general population did not have neither the Internet nor the devices which to use it (e-Estonia, 2015). But today, Estonian citizens can complete state and municipal services online in minutes (Vabariigi Valitsus, 2018; Jaffe, 2016).

E-Estonia is the initiative of Estonian government to facilitate citizen interactions with the state using electronic solutions (E-Estonia, 2015; Björklund, 2016). The e-government should be understood as part of the general investment in high technology that followed reestablishment of Estonia as an independent state at the end of the 1990s (Kitsing, 2011). E-government has been well suited to the Estonian transition from a former communist republic into a modern democratic European state (Kalvet, 2012; Kitsing, 2010).

E-government is being introduced because the digital tools are at hand and because politicians and public administrators see the possible gains in terms of efficiency (Björklund, 2016). E-government has been developed through close cooperation between private and public interests, with the banking sector in particular leading the way (Kitsing, 2011). Favorable economic developments made the investments in informational infrastructure possible but launching e-government was also in line with the process of strengthening democracy after a long period of extraneous authoritarian rule (Runnel et al, 2009; Kalvet, 2007).

E-government entails digitalization of governmental records and national data as well communication between the government, public administration, and citizens (Estonian Information, 2006). Launched in 1997, it's let citizens file taxes online since 2000 (95% of Estonians file taxes online). E-services created under this initiative include as well e-voting, e-tax board, e-business, e-banking, e-ticket, e-school, university via internet, the e-governance academy, as well as the release of several mobile applications (Vabariigi Valitsus, 2018). It also allows Estonians to obtain medical prescriptions and test results (e-Estonia, 2015). The e-health is a digital service created under the initiative of e-Estonia, and it is aimed to improve public health by offering new preventive measures and increasing the awareness of patients (Estonian e-health, 2015). The measurable goals of Estonian e-health strategy include the reduction of the incidences of diseases, preventable hospital visits and repeat treatment, and more

effective time management by medical personnel (eHealth, 2017).

The government, hospitals, doctors and patients - all are hoped to benefit from the e-health system (e-Estonia, 2015). 95% of health data is digitized in Estonia, 99% of prescriptions are digital (eHealth, 2017). Each person who has visited a medical doctor has an online e-health record that ca be tracked. The health information is kept secure identified by the electronic ID-card. It is accessible to authorised individuals. KSI Blockchain technology is being used for the system to mitigate internal threats to the system and to ensure data integrity (eHealth, 2017).

To fulfil all its goals, high quality of source data and the capabilities of secondary use of data are of critical importance. An information system not corresponding to the expectations of users or non-optimized data acquisition and collection of low-quality data may influence all the goals for which the data are collected. Also, those may hinder the achievement of the goals for which the patient has given their consent, and which also includes secondary use of data. The focus area also includes increasing of the competence of health care professionals to process data (skills and knowledge) to collect and enter high-quality health information (Estonian, 2015).

3 ELDERLY PEOPLE LEFT BEHIND FROM E-SUCCESS

One should be delighted that the range of e-services is becoming so diverse in Estonia. However, there is a vast number of people who will suffer a kind of information blackout (TNS EMOR, 2014). Estonia's strive towards a digital society teeming with e-services could present a serious challenge for older Estonians, because they can't use e-services due to lack of access or skills, or they simply do not own a computer (TNS EMOR, 2014).

Statistics reflect that less than a half of people aged 65 and over are at the risk of poverty in Estonia (European Commission, 2018). In the third quarter of 2018, the average monthly retirement pension was only € 448 (Eesti Statistika, 2018) in Estonia while for example the German and Swedish seniors enjoy much better life (Eurostat, 2017, 2018, 2018a). Considering the differences in purchasing power, the average old-age pension in Estonia is about 3 times lower than in the above-mentioned countries (Eurostat, 2019).

With respect to Internet usage information technology devices, Statistics Estonia collects only data among Estonian residents up to 74 years old (Eesti Satistika, 2018a). Thus, the elderly citizens have been left out and there is no adequate information on their health information seeking behaviour and usage of e-health system. Probably it is assumed that they use Internet less than other age groups. However, as noted by Estonian Chancellor of Justice, acquiring updated data about elderly cannot be considered less important (Chancellor of Justice, 2018). There is no good reason to distinguish 75-year-olds and older people from the rest of the population when collecting Internet usage data. For these reasons, the Chancellor of Justice advises the Statistical Office to also collect Internet usage data from people older than 74 years of age.

Thus, it could be supposed that there is a substantial number of older Estonians who have never used a computer and a very modest share of those with advanced computer skills. Also middle-aged Estonians i.e. aged 50 to 64, lag behind in comparison with their European counterparts. Apparently, more than 10% of the people belonging to this age group have never used a computer. Despite the fact that the share of internet users among 65–74-years-olds have increased, the digital divide between the youngest (16–24-year-olds) and the oldest (65–74-year-olds) age group is 46 percentage points (Statistics, 2017). Thus, the frequently launched e-services are not actually accessible to those who need them the most.

The chancellor of justice has noted that Internet access is taken for granted by most people in Estonia and this service can already be considered a main necessity (Chancellor of Justice, 2018). Computer skills training and Internet usage is associated with quality of life and well-being for the elderly. This can be a significant tool for supporting the elderly when solving issues associated with living arrangements (Chancellor of Justice, 2018). For instance, to avoid social isolation, solve practical issues, and in case of reduced mobility, encourages life-long learning and cultural participation (Ainsaar and Soidla, 2018).

To diminish the digital divide between elderly people and younger generations, EUR 7.2 million has been set aside in the state budget for 2017–2020. It is hoped that more extensive use of the Internet may help to increase seniors' quality of life. The objective this plan is to increase the percentage of Internet users among the entire population by 2020, from the current 89% to 95%. The means for this include digital literacy and other training as well as raising awareness.

4 LITERATURE REVIEW

Many scholars in the world have focused on digital divide with respect to Internet use by elderly on medical purposes. For example, some researchers have focused on personal traits of senior citizen when using e-health system. In Germany, a study analyzed how individual characteristics shape elderly's perceptions and behaviour in using e-health (Rockmann and Gevald (2015). Since modern technologies become increasingly complex, elderly's mental models on how technology works might not be supported. The authors focused on how individual characteristics shape elderly's perceptions and behaviour in using e-health. They proposed a research model in order to understand how personality traits determine perceptions and behaviour of elderly's health-related Internet use. According to them, computer self-efficacy (CSE) and outcome expectations regarding internet-based health information act as primary determinants of individual's intention to use eHealth offerings. They argued as well that the five broad personality traits directly affect elderly's CSE.

Vancea and Solé-Casals from Chile and Spain examined the potentialities of new informatics developments in generating solutions to better address elderly people's daily-life, especially those with chronic illness and/or low autonomy. The authors attempted to propose a research agenda, by exposing various strengths and weaknesses of eHealth innovations for elderly, mainly grounded in secondary sources analysis (Vancea and Solé-Casals, 2016).

Wu and Li from the School of Information Management, Wuhan University (China) explored the behavioural patterns of Chinese elderly when searching for online health information. A controlled user experiment was conducted to understand how Chinese elderly people search for online health information. 20 elderly people completed three search tasks based on three different health information seeking contexts. The outcomes indicated that education and familiarity with Internet searching were found to significantly affect task performance. Health, Internet search experience, and information credibility influenced the decision to seek for information online. Primary challenges were lack of technical skills, internet search skills, and medical knowledge (Wu and Li ,2016).

Tennant and colleagues focused on information seeking behaviour among the US older generation. They studied factors that influenced e-health literacy among baby boomers and older adults. The authors explored the extent to which sociodemographic characteristics, social determinants, and electronic device use influenced e-health literacy and use of Web 2.0 for health information. The results revealed that being younger and possessing more education was associated with greater e-health literacy. Females and those highly educated, particularly at the post graduate level, reported greater use of Web 2.0 for health information. They stressed the need for more in-depth surveys and interviews among more diverse groups (Tennant et al, 2015).

Thus, the issue of elderly people using Internet for retrieving health information and e-health system has arisen interest among scholars. In Estonia, some researchers have been done with respect to people's satisfaction with e-services (TNS EMOR, 2014). However, no studies have been conducted focused on health information behaviour of senior citizens (74+). Thus, the author of the article hopes to shed more light over this important issue with this study.

5 METHODS

In this qualitative pilot study, five in-depth interviews (three females and two male pensioner) and a focus group (FG) interview with seniors were carried out at the Haabersti Social Centre in Tallinn in May 2018. All the participants were older than 74 years of age.

First, in-depth interviews (Boyce and Neale, 2006) conducted on the 25th May 2018 provided me some relevant information about pensioners' usage of the internet and information technology and their online health behaviour. Second, the focus group (FG) interview (Better Evaluation, 2011) enabled me to obtain more detail information on the same issues. The FG interview was conducted on the 28th May 2018 and lasted 1 hour.

The respondents (12) of the FG interview regularly participated in an arts and crafts class and a sport club for seniors of which 7 were females and 5 males.

The author of the article was interested in the following aspects:

- Do they have access to the internet and computers? If not, then why?
- Where do they usually obtain information related to health and diseases?
- Have they used internet to retrieve information on health issues? If not, then why?

- Have they heard about e-health system?
- Have they used this system?
- How do they estimate their health conditions?
- Have they used some other e-government systems (e-voting, e-tax board, e-banking, e-ticket or any other)? If no, then why?
- If yes, then are they satisfied with these systems?
- If they have used the internet to retrieve health related information, then what difficulties and problems they have encountered?
- If they haven't use internet yet, are they interested in becoming familiar with internet and computers?
- Whether or not they would like to attend courses on internet?

Interviews and the FG interview were analysed with a software program MXQDA designed for qualitative research. Major themes and related discourses were identified.

6 OUTCOMES

The interviews revealed that the elderly have rare exposure to the internet. Traditional face-to-face communication or discussions with friends over the phone is allegedly more convenient for them. They know, of course, that the internet offers lot of health information and they have heard about the e-health system. However, they prefer to obtain information related to diseases from their medical doctors.

The FG interviews further revealed that poor economic conditions really prevent pensioners from using information technology. As they lack experiences with internet and IT-devices, they really do not know how to use them. Following discourses emerged.

"The economic circumstances are one reason why we do not use the internet". Even though the FG participants did not express major concerns about their economic situation (presumably due to certain self-restraint), only 3 of them reported to have access to a computer, 2 had personal computers at home and one had a tablet given as a gift by their children, one gentleman had a smart-phone. According to this male pensioner (83):

"If my pension was higher, I would probably buy a computer myself. My daughter gave me her old smart phone, but I never use it to go online. I use it only for answering incoming calls and calling to my daughter mainly or my doctor. … I think all the ideas with respect to the e-health and so on are good, but you know, if you haven't got a computer, then you don't know how to use the computer and then all the e-health systems are of no use to you. …. In truth, I also do not use e-banking facilities. This stuff is all for people younger than me…."

"Internet is an entertainment for younger generations." Internet was not considered a source for retrieving any hard information, but rather a gadget for younger generations for seeking entertainment. According to a lady (75):

"Once I switched the computer on, and it seemed to me that I saw some porn on the screen. I quickly shut it down again…. If I need some health information, I can ask my family doctor. She is very kind. "

Seeking health information from the internet was rated as part of the youth lifestyle. Surprisingly it turned out that pensioners have almost no interest in the internet. One interviewee stated (female, 80):

"Children bought me a tablet, but I almost never use it. I think this device can be used for fun, but to be honest, I have better things to do. … Why should I look for health information using this option? I never do that".

Another lady (84) noted: "I don't think I need any means of IT or internet for that matter. This is something for the younger generations. When my great-grandchildren visit me, then all they do is fiddle with their cell phones.

"The adequate health information can be obtained only from medical doctors". For seniors, health information on the internet environment meant mainly information on alternative medicine, thus considered not reliable. For them, traditional medicine was the only acceptable framework for health issues and the only well-established setting where to voice their health concerns was a private consultation with their doctor. A lady (79) pointed out that:

"Listen, we have survived the Soviet time, thus, we are strong enough not to believe all kind of rubbish. …. All these miracle supplements and gemstones, this stuff is for younger people and they obtain all the information from the internet. They believe in it, it's for them, it's business … If I need some information about my health conditions and diseases, I will ask my doctor of course".

They claimed not to believe as well questionable medical stories disseminated by the mass media. They considered alternative medicine to be

something that fascinates the younger people whom they believed to be somewhat naïve and weak.

"My children assist me in coping with the e-health system". Seniors admitted that if they wanted to find some information online, then their children or grandchildren would show them how to conduct the searches and assist them. A gentleman (76):

"I do not own a computer, but my children do. If I need some information, then my daughter, for example, can find this for me on the Internet. Actually, as I recall, I have never needed it".

A lady (76) noted: "I sometime use the system with the help of my daughter. Simply to see what the doctor has put down there e.g. the results of my blood tests or screenings and other medical procedures. And I know it is possible to book a doctor's appointment online, but I haven't done it just yet".

"We have a lot more to do than search the internet for health information". Surprisingly, the elderly claimed that health is important to them, but they prefer other topics. They said that they do not like to complain about their diseases, rather they try to focus on more positive and cheerful topics such as grandchildren, cooking, handicraft, TV shows. A joyful lady (77) noted:

"If I want to discuss my health issues with somebody, I can always call my friends. In fact, we prefer to converse about more joyful things. It seems to me that it's not a good idea to bemoan all the time. If I have a problem, then I quickly go to the doctor."

The elderly participated in the FG admitted the decline in their health conditions, but they said they do not like to fill their daily routine with health concerns and complaining. The participants liked to contrast themselves with the younger generation. Having survived the Soviet era, they regarded themselves as strong enough to cope with their old age problems as well.

Thus, in addition to the economic difficulties, number of other factors were highlighted during the FG interview with respect to the low use of the internet. IT-devices information technology was interpreted as a part of the youth lifestyle.

Elderly liked to confront themselves to young people, who were considered weak and naive. Excessive use of internet and smart devices was considered a characteristic of young people and suitable for them. It may therefore be thought that the state-run IT courses would not be of particular interest to them.

Limitations of the Study. First, the results shed light on only a small part of Estonian pensioners. Second, the elderly people in the group were not very talkative about their economic conditions and difficulties, only 5 pensioners were willing to openly elaborate on such matters in the group. Thus, the majority of the focus group participants were rather reluctant to speak about their difficulties, health conditions and their health information seeking practices as well. This can be explained by the fact that complaining is not a good tone for this age group. When conducting the following FG interviews in the other social centres questions should be better formulated. Pensioners of diverse social backgrounds and nationalities should be integrated to the study.

7 SUMMARY

Digital healthcare services are especially important in the context of population ageing. Estonia, the former Soviet Republic that has developed rapidly over the last decades, is often praised for its e-government solutions including e-health. However, not everyone enjoys Estonia's success in information technology. Especially older people are left behind due to economic deprivation or lack of skills.

The pilot study, which is the first step in the second doctoral thesis of the author which is oriented to study patterns of online health information behaviour of Estonians, revealed that the elderly, in addition to the economic disadvantage, are reluctant to use computers and traditional communication. They contrast themselves with young people, who they think spend too much time in internet entertainment environments and who trust alternative medicine. With respect to health problems, they believe in their doctor rather than searching internet. However, with the help of their children, the e-health system is sometimes used to obtain medical prescriptions and test results.

The study contributed to the suspicion that the wholesome public image of Estonia's e-success not always corresponds to the reality. Fortunately, the first steps have been taken nationally to eliminate the digital divide, for example, the government has allocated millions to teach the elderly to use the internet and IT tools.

The author of the article hopes to provide some new insights on elderly's health information behaviour. In the future, the author is going to integrate all the other aspects influencing seniors' online health information behaviour to her study. This information could help to understand given age-group

better which could be necessary in order diminish information gap in the society. As a next step, it is necessary to repeat FG interviews in some other social centres in Estonia. Second, a quantitative study should be conducted to reveal additional aspects regarding health information behaviour of Estonian elderly and to obtain data on the basis of which more firm conclusions could be drawn.

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