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Two Technology Experience Café organized in Denmark

The SiforAGE Consortium

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1. Executive Summary

SIforAGE -Social Innovation for Active and Healthy Ageing- project pursues to strengthen cooperation among the stakeholders working on active and healthy ageing. In this framework, the Work package 2 -Active participation of end-users in research activities- focuses on opening research activities to older people as final users and giving them the opportunity to directly speak with researchers and developers of assistive technologies. In particular through testing and giving their opinion about recent devices, solutions and products offered in the market for them

Goals of all TEC trials

- Engaging with a representative group of final users (elderly people and/or their caregivers) and other stakeholders (e.g. NGOs working with older people, charities, authorities, research/technology promotion agencies, etc.).
- Focusing each Technology Experience Cafés on a limited set of particular technologies (1-5 examples as maximum) supporting healthy and active ageing.
- Promoting technologies enabling active inclusion of elderly population into social life of the society for the mutual benefits of older citizens and other groups of population.
- Providing ICT industry with important direct user experience evaluation results specific to the products/services targeting the market segment of products/services for older people.
- Enabling direct brokerage between assistive technology providers and potential consumers and/or their representatives.

The Technology Experience Café has been conceived to create a framework for Seniors to test and give feedback on solutions that want to target the Senior Segment. The specific objectives of the Danish Technology Experience Café (hereafter abbreviated to “TEC”) was creating a more open Café form where not only the Senior-user but also for health professionals and caregivers.

Two TEC were conducted in Denmark: A comprehensive 5 hour session at Diakonissestiftelsen,- Frederiksberg the 8th of May 2014 (hereafter named TEC 3) and a smaller one conducted in Glostrup 17th of November 2014 (Glostrup TEC).

At the TEC 3 22 nursing students from Diakonissestiftelsen College accompanied the Senior users and where also asked to fill out their opinion of using technology when caring for Senior persons.

The technologies presented at the TEC3 were targeted to senior users the technologies in the Glostrup TEC were targeted at normal users.

Both the conducted TEC were popular with the Senior users indicated by the comments made on the day, but the questionnaires did not show the hoped for positive change in perception of use of technology. This could be due to the technologies presented at the second Glostrup TEC were not targeted or in any way modified to the Senior segment. Two of the technologies tested at the TEC 3 in May were targeted to the senior segment and all four had a favourable testing.

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2. Technology Experience Café - 8th of May 2014, Frederiksberg, Denmark

2.1 Conduction of the TEC 3

The TEC 3 was announced at two user group meetings at Søster Sophies Minde, a nursing home operated by Diakonissestiftelsen, and the TEC 3 event conducted at the nursing home main area in Denmark.

The TEC took place on 8th May 2014 at the Main area of Søster Sophies Minde Frederiksberg Municipality which is visited by senior persons during the day for social interaction/entertainment purpose. Four solutions were made available on the day, and the participants were invited to take the tests according to their personal itinerary assisted by a nursing student. Before the beginning of the activities, participants were asked to fill in a consent form, questionnaires designed for individual the technologies to be tested and also a pre-questionnaire. Four stations were created, one for InCare, DukaBOX, one for Brain+ Captain Challenge game, and one for the “who am I game” (both games presented on mini iPad tablets),

2.1.1 SiforAGE partner that led the Danish TECs.

InvestorNet is a small private consultation firm, which specializes in coaching of SME's on investor readiness and conducting Master Classes on how to present innovations as business proposals. Thus with no prior knowledge on technology testing nor Senior care. To fulfill the requirements of D 2.3 in SiforAGE, InvestorNet allied itself with Diakonissestiftelsen.

Diakonissestiftelsen is a non-profit, non-commercial foundation with about 400 employees and 250 volunteers. They work with healthy aging, a modern senior life, life-coping in all stages of life as well as an active and forward-looking study and learning environment. They operate nursing homes, home care and psychiatric flatmate create

Diakonissetiftelsen also has a large training-center with 1,400 students in nursing, social and health education as well as Bachelor of Christianity, Culture and Communication (3K program), with a special focus on collaboration and management of volunteers.

Diakonisse stiftelsen provided the venue for the TEC 3, its contact-network of senior participants, volunteer helpers and 22 nursing students.

3 companies provided the solutions to be tested at TEC3 and instructors in the use of the technology.

2.2 Objective of the Danish Technology Experience Café

The first two TEC cafes had different focus. The TEC1 had a prototype focus (Technology providers & Seniors), and the TEC2 with focus on digital enablement and independence (Seniors & Public Authorities)

The TEC 3 in Copenhagen intended to break Ageism misconceptions about technology readiness of the Seniors and also de-mystify the current technologies (robotofobia = fear of robots. A washing machine is a “washing robot”, but generally not feared.). We expect to get valuable feedback to the technology and or service providers both about the “users” and the “buyers” concerns and feature focus. We will be looking at three potential interested parties a) the senior = the user or target of solutions b) the care professionals = the user, c) the buyer which could be both an elder and a service organization (private or public).

We will through our Impact model developed in the KMU5 select technologies to be included in the TEC 3 with priority on Implementation Strategy, Cost of use and Market-readiness – and less on pure Novelty (no proto type/ no patent pending technologies), also that it fits into the program for the day of the TEC Event or fits space requirements.

Due to the Danish Elder Care system being mainly professional, publicly paid for in Municipal budgets, the Private Public Partnerships are in many cases those which determine the success of a particular technology or service concept. Implementation strategies will also be discussed and we will observe acceptance level of both the “end-users/targets” and of the “care professionals”

Key Concepts in the TEC 3 objectives are:

- Impact
- Open
- PPP
- Role-models

This means No secret Prototypes, to avoid NDA's, confidentiality contracts and other legal barriers for involving both the Senior Users and the Care-professional users in the Technology experience. Also if it is not possible for the Technology to come to the Café then the “Café” must come to the location where the Technology can best be experienced.

2.3 Participants

2.3.1 Helpers / Role-models = Diakons

- * From 65 years old
- * possibly already involved in volunteer work
- * Willing to act as role models

Helpers should be prepared to be asked personal questions by the Participants, like where they are from and other things. Seniors need to be greeted with smiles and maybe an offer to have a coffee or water while they wait for their turn at the different stations. Taking time to talk a bit with the participants is essential for the fun ambiance.

Make the Helpers visible by giving them distinctive scarfs or key chains (need to be very visible)

2.3.2 Primary Users = Senior Users

Direct users or end-users: physical person having a direct action/input (active or passive) on the tested technology

- * From 65 years old
- *current professional activity not important.
- * Whose health condition allows sufficient autonomy to perform the test. targeted users should not be people depending of constant healthcare assistance or other assistance in manipulating objects.
- * Number of direct users targeted: 30 (minimum), 45 (maximum)

The Senior take their time to read the Questionnaire before filling out. Consider having the Questionnaire made in larger text e.g. + 14 and with serif

Users should be invited to participate and reminded to bring with their current sight and hearing aids, as well as other means allowing normal daily activities (where needed e.g. walkers, wheelchairs, etc.)

2.3.3 Secondary Users = Caretakers and teachers of caretakers

Indirect users: person / entity representative benefiting from data provided or action(s) allowed / stimulated by the technology during its usage

- * *Whom activity consists in helping elderly in their daily life (partially or totally) whether paid or unpaid* (e.g. « helpers » (relatives), caregivers, practitioners, etc)

* *Whom professional activity is linked to healthcare and prevention for elderly* (e.g. practitioners and also person in charge of coordination of activities of care and « home services », funding of such activities (local, regional or national authorities, stakeholders))

* Number of indirect users targeted: 30'

2.3.4 Technology Providers = Confirmed: Duka PC, InCare & Brain+

Technological solutions developed, supported and marketed by third party suppliers. Their interest in participating is defined by the opportunity to get in direct contact with potential users, their representatives, market uptake facilitators (e.g. insurance companies, authorities, etc.) for obtaining feedback/evaluation, estimating market potential and pushing market uptake.

2.3.5 Facilitators/Helpers = Responsible for providing the TEC setting and organization

The TEC organizer normally pursues the goal to raise awareness among elderly citizens of new technologies for active and healthy ageing.

Keeps contact with attendees afterwards – to pursue follow up opportunities (for example inclusion in one or more mailing lists, running web forum/blog, web social community, etc.)

2.4 Infrastructure / Facilities

a short characteristics of the venue where the event takes place in terms of

2.4.1 Café Area

Lots of signs to indicate the right place of the TEC

Contain Garderobe which is guarded by the Helpers or others persons!!

Make sure that there are plenty of Chairs in the reception area and in the rest area.

Toilet facilities easy to find, near by and with posters

And access to the TEC location has to be easy – minimum of stairs and revolving doors.

Also in snow and rain make sure that the premises are not slippery or wet.

Power Point with positive messages and images of happy and active seniors.

2.4.2 Technology try-out area

Set-up of technology, role-models and Instructors in the technology.

Space, chairs and tables to fill out any non-SiforAGE questionnaires

Remember to also have plenty of water and tumblers for both Participants and Technology Providers – most people are a bit nervous.

2.5 Ethical/IPR issues:

Anonymization of Questionnaires and asking Seniors consent at the start of the TEC to have their photo taken as part of documentation or promotion of SiforAGE event.

IPRs of the technology owners were protected by making technology owners aware that this is an open demonstration beforehand.

2.6 *Informed Consent.*

In order to ensure the basic ethical issues handling (e.g. in line with the EU regulation on private data handling), each TEC shall develop and make upfront available the Informed Consent form (a light-weight document, examples are provided in Annex I). Each participating elderly user shall be informed about:

- Objectives of the event
- Activities and procedures he/she will be involved in
- Intended use of the results (e.g. surveys results)
- Arrangements concerning audio/video recording
- Other issues according to national regulations/practices

2.7 Other Practical notes

Having a nice professional looking visual identity lends a lot of credibility to the project, to the TEC, the organizers, and the EC or other sponsors.

Rest time in between experience sessions and something to do in the pauses (Sudoku and crosswords)

Make sure that Logo of the TEC is known to the participants beforehand and that it is easily readable.

All documents in local language beforehand.

Make sure that the marquees of managing anonymity of participants are ready and printed out

2.8 Event Structure

Flow of accommodating the participants.

Welcome to Participants at sign-in desk, confirmation that they are in the right place offering coffee, and indicating where sign-in to the TEC happens and what Questionnaire must be filled out.

Giving "anonymization", Personal itinerary and Questionnaire stickers Identify the ones who do not want to be photographed.

Fill out first Questionnaire approximately 25 minutes. Reassurance and some help needed from Helpers (not Facilitators as they are busy with organizational tasks such as giving 1st questionnaire and assigning individual itineraries to participants)

Signaling the start of Technology Experience sessions

Circulation between the sessions (4 different Technologies), on average each participant experienced 4 technologies, with interlined pauses to rest and socialize. Each itinerary is individual.

Most Participants talked to each other in the pauses between sessions. However interacting with the Helpers and having alternative forms of entertainment in the Café (waiting) area is important. Sudoku, cross words and local Newspapers were provided in the area.

Some Participants sit alone but are happy when a Helper initiates talking.

End Questionnaire filled out

The sessions are ended with a nice joint farewell session – cake.

Surprise gift to the Participants and Technology Providers.

2.9 Experiment

One important condition is to precisely know the time needed for the experimentation (including the venue to the site = walking distance, the explanation by the provider and the testing) and for the evaluation of the technology (answering the questionnaire).

Experiments are done in 1 step (An experiment without interruption):

- the Tester come to the experimentation site
- (basic) explanation is given by the Solution-provider
- the Tester experiments
- the User evaluates the technology
- and the tester goes (to the main room or to another experiment).

This clearly impact the way to design the scenarios for the participants (providers / users).

2.10 List of technologies presented at TEC 3

2.10.1 DukaPC

dukaPC launched a new product dukaBOX, that requires even less digital foreknowledge than

dukaPC, but at the same time can cope with integration with NemID (Danish digital citizen ID) and thus the requirement from public entity that the Senior is a digital citizen. The product consists of a monthly subscription, a keyboard, a mouse and a dukaBOX cable to connect a normal TV screen with HDMI access (all flat screens and TV purchased in connection with the Danish TV signal switched from analogue to digital in 2009, have this by default). Basically there are four main parts of the interface; "Email", "internet", "Internet banking" and "E-citizen" all seen on the monitors main screen when dukaBOXen is connected. There is no need to install any extra programs, such as their can be on a computer. Internet access is provided directly through dukaBOX, and users should not have to set up a separate router or access an existing Wi-Fi to "get on-line", users only plug the HDMI cable to the TV screen and the power supply line to dukaBOX.

It is a solution that helps active and healthy aging by improving communication between the Senior person and the outside world, its utility space is at home, but the product puts the Senior in contact with public entities (and can minimize transportation needs). The innovation is both Hardware and Software based, and it is a standalone product. The solution is intended to be purchased by the individual, and its acquisition is both event (digitizing requirement by public authorities in Denmark) and Process triggered (wanting to use email and internet).

2.10.2 InCare

InCares Citizen-screen is an integrated digital system where dementia patients and other care needing users, have access to digital functions such as calendar of activities, "Who is on duty today," week-menu overview and food ordering, e-mail, media files such as music and photos, and the ability to "call-up" with Skype. Only the Citizen-screen technology was presented in TEC 3, but 80% of the Citizen-screen functions are associated with the Care- screen, which is an overview screen that is connected in a closed network with the individual Citizen-screen. Carers have access to their own enclosed part of the Citizen-screen where they can report its results to the next shift of personnel, and control and set medicine consumption of the citizen. In addition, relatives can up-load media files like photos and music to each Citizen-screen via an SMS proof system from any Internet-connected computer in Denmark

It is a solution that helps AHA by improving communication between the "Senior", relatives and carers, its space of use is at home, the innovative solution includes both hardware and software. The solution requires a support network to function, and it is intended to be purchased by a larger organization such as a nursing home or a municipal home care, and its purchase is Process triggered.

2.10.3 Brain+

Brain + brought two games "Captain Challenges" and "Remember Me" (a third game "Fresh Frog" was not ready on May 8th 2014). Brain Plus will brought 12 mini iPads to play with. The test was about gaming experience - and whether the user wants to train regularly with the games that will be presented at TEC 3.

Brain + games are solutions that help AHA through preventive training and by rehabilitating physical or
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mental abilities. Its use is at home, the innovation is software based, and it is a standalone product (although you have to have a tablet to install games on). It is intended to be purchased by the individual, and its acquisition process is triggered.

3. Documents created for the TEC 3

- Letter of invitation to elderly (in Danish)
- design of flyer/poster to general public (in Danish)
- Scenario which allows establishing a schedule for the technologies and for the users. In this file Facilitators and Helpers can identified who is doing what at what time.
- Description of Objectives of the TEC 3 and participation of Diakonissestiftelsen(in Danish)
- Consent letter (in Danish)
- design of questionnaire by Sibila Marques, ISCTE
 - general TAM questionnaire for Senior users
 - general TAM questionnaires for Nursing students
 - specific technology questionnaire
- description of the Helper/ rolemodels /volunteers role in the TEC (in Danish)
 - introduction of the TEC,
 - formal invitation to participate,
 - organisational and logistics aspect and with information on the type of technologies, design
- individual itinerary each Senior user for testing all four technologies
- description of each technologys “task to complete” during testing (in Danish)
- stickers with ID number for questionnaires
- ID badges for Seniors, Nursing students, Helpers/facilitators and Guests Posters for Toilets, showing the way to TEC and each Technology

4. Second TEC in Denmark held in Glostrup 17th November

The Glostrup TEC was organized by INVESTORNET aimed at creating a place where technologies were discussed and tested by older people with a co-host/instructor, in a friendly atmosphere.

4.1 Description of the Target Group

The target group of the TEC Glostrup organized in Denmark was constituted by direct users: people that will use in real life the technology presented (the one which action will generate first and compulsory electronic data for future use/interpretation).

The TEC Glostrup involved 18 participants (14 of the 18 participants answered both the pre and the post questionnaires, hence results are based on this specific group) from a Day Center for primarily older people in the Municipality of Glostrup, Denmark. The mean age of the participants was 69.07 (SD = 4.47) and the majority of them were female (64.3%). 50% of the respondents reported to live independently in their community mostly by themselves (57.1%) or with a marital partner (35.7%). 57.1% were retired from work and 21.4% employed full time. They hold in mean 13.50 years of education (SD = 5.29) and the majority of them (53.9%) rated their health from good to excellent.

4.2 Technologies of the Glostrup TEC

Two on-line services were tested in TEC: a new consumer targeted Energy Price portal and the new public E-box (internet mail system).

4.2.1 El-pris tavlen

Short description: Online portal consumers (both private and commercial) to select and contract with power supplier and select price offer (e.g. fixed, variable, climate friendly).

Targeted market: All the consumers, including older people.

Requirements: Internet access.

4.2.2 E-box

Short description: Since November 1st 2014 all written communication between public authorities and Danish citizens only take place via e-mail. In this regard, E-box constitutes a virtual platform that allows this communication between individual citizens and public entities.

Targeted market: The targets of this technology are all the Danish citizens above the age of 15, including therefore older people.

Requirements: Internet access.

4.3 Conduction of the GlostrupTEC

There was no special announcement of the TEC event conducted in Denmark.

The TEC took place on 17th November 2014 at the Day Care Center in Glostrup Municipality which is visited by older people during the day for social interaction/entertainment purpose. Two on-line platforms were made available for the Day Care Center visitors during the day, who were invited to take the tests on a first come first served basis. Before the beginning of the activities, participants were asked to fill in a number of forms special designed for both the technologies to be tested and also a pre-test. Four laptops with DUKA-PC interface were made available for the participants during the day: two were used to get access and test the price portal (E-pris tavlen) and two were used for the E-box test.

4.3.1 User Experience Survey

Preliminary analyses revealed no effects of demographic factors on the results (gender, age, education level). None of these variables were considered in posterior analyses.

4.3.2 Survey design

In order to evaluate the results of the TEC, a pre-post evaluation (n=14) was used. The goal was to access the effectiveness of the TEC in influencing attitudes and behaviours toward the use of technologies.

All participants were asked to fill a questionnaire before (pre-questionnaire – see A) and after (post-questionnaire – see Annex A) attending the TEC.

Evaluation of the technologies during the TEC (n = 15): participants were also asked to fill a brief questionnaire (see Annex B) regarding the specific technological devices they tested during the session.

5. Design of Questionnaires in both TEC events

Two questionnaires were created to evaluate attitudes and motivations regarding the use of technology (one for the pre-post evaluation and one for the evaluations of each technology during the TEC). These questionnaires shared a similar conceptual background, although the questionnaire used during the session was considerably smaller than the pre-post questionnaire. The questionnaires were similar to the ones used in TEC1 in France and TEC2 in Italy.

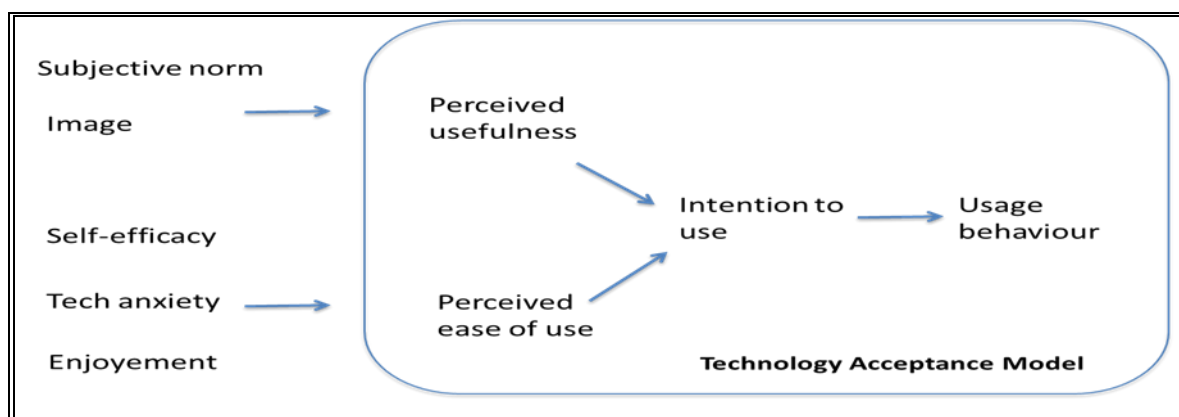
The questionnaires were based on the **Technology Acceptance Model (TAM)** introduced by Davis (1986), which is one of the most widely accepted information technology (IT) models. This model theorizes that an individual's behaviour intention to use a system is determined by two beliefs:

- perceived usefulness, defined as the extent to which a person believes that using the system will enhance his or her performance, and
- perceived ease of use, defined as the extent to which a person believes that using the system will be free of effort.

Recently TAM was theoretical extended by Venkatesh & Davis (2000), to explain perceived usefulness and usage intentions in terms of social influence and cognitive instrumental processes. TAM-2 includes additional key determinants of TAM's perceived usefulness and usage intention constructs, and to understand how the effects of these determinants change with increasing user experience over time with the target system. These authors have developed an instrument to measure these variables. Later, a Modified version of TAM-2 was developed by Won et al. (2007) to evaluate the acceptance and characteristics of technologic products for the older users.

In this work, our goal was to use this instrument to measure usage intentions, exploring in particular some of the key predictors of perceived usefulness and perceived ease of use (see Figure 1). Table 1 presents a brief definition of each factor included in this model.

Figure 1. Dimensions of the TAM2 model



Based on the literature review, we also included a measure of the stereotypic perceptions of older people and use of technology since this is identified as one of the main barriers to technology use by this age group. In fact, there is a stereotypical view that older adults are technologically inadequate. What is particularly insidious is that the negative sloping of human potential represented by ageism may well form the image that older people themselves internalize (Chaffin & Harlow, 2005). For example, being too old to learn to use computers is a belief held by many older people, even before attempting to use computers (Timmermann, 1998, in Broady, 2010).

In fact, the manner in which older people are viewed and treated can impact upon their acceptance and utilization of technology (Broady, 2010). The negative self-beliefs held by the older students may well be ascribed not solely to their poor performances (Hawthorn, 2007), but also to the negative stereotypical views held by their tutors, as well as the fact that the tutors expected them to learn new skills not commensurate with their existing skills and knowledge more rapidly than they were capable of doing (Broady, 2010). In order to measure the impact of ageing stereotypes we included some items measuring stereotype threat, stigma consciousness, stereotype content in general and specifically related with the use of technology by older people (see Table 1).

Finally, we also included some demographic questions and items evaluating previous experience with technological devices.

For the purposes of all statistical analyses we consider an effect significant if it is $p < .05$

Table 1. Variables measured in the questionnaire – psychometric qualities at the TEC					
Variables		Source	Pre questionnaire	Post questionnaire	During questionnaire*
Previous experience with technologies	Use of technologies <i>refers to the frequency of use of technologies in daily life</i>	Original item	Q1.1.	Q1.1.	-
	Frequency of use of different types of technologies <i>refers to the frequency of use of specific technologies in daily life</i>	Adapted from Matlabi (2012); Hernandez-Encuentra et al. (2009); Patomella et al. (2011)	Q1.2.	Q1.2.	-
TAM2	Intention to use technology/specific technology <i>expressed tendencies to use technologies in daily living</i>	Adapted from Venkatesh (2000); Venkatesh & Davies (2000); Wong et al. (2007)	Q2.1	Q2.1	Q1.1
	Ease of use of technologies/specific technology <i>the extent in which the person believes that using the system will be free of effort</i>		Q2.2-Q.2.4 $\alpha = .98$	Q2.2-Q.2.4 $\alpha = .97$	Q1.2-Q1.4
	Usefulness of technology/specific technology <i>the extent to which a person believes that using the system will enhance his or her performance</i>		Q2.5-Q2.7 $\alpha = .92$	Q2.5-Q2.7 $\alpha = .90$	Q1.5-Q1.7
	Subjective norm <i>person's perception that most people who are important to him think that</i>		Q2.8	Q2.8	-

	<i>he should or should not perform the behaviour in question</i>				
	Image <i>the degree to which use of innovation is perceived to enhance one's status in one's social system</i>		Q2.9/Q2.10 $r = .69^*$	Q2.9/Q2.10 $r = .51^*$	-
	Self-efficacy <i>one's beliefs about his/her ability to perform a certain task/job using technology</i>		Q2.11-Q2.13 $\alpha = .83$	Q2.11-Q2.13 $\alpha = .82$	-
	Technological anxiety <i>individual's apprehension or even fear when he/she is faced with the possibility to use technologies</i>		Q2.14/Q2.18- Q2.20 $\alpha = .82$	Q2.14/Q2.18- Q2.20 $\alpha = .87$	Q1.8/Q1.12- Q1.14
	Enjoyment <i>the extent to which the activity of using a specific system is perceived to be enjoyable in its own right, aside from any performance consequences resulting from system use</i>		Q2.15-Q2.17 $\alpha = .99$	Q2.15-Q2.17 $\alpha = .98$	Q1.9-Q1.11
Stereotypes of old age and technologies	Stereotypic behaviours and technology <i>the degree in which certain behaviours are perceived to be typically associated with different age groups</i>	Swift, Abrams & Marques (2013)	Q3	Q3	-
	Stereotype threat <i>anxiety or fear that one's performance could be affected by the stereotypic expectancies regarding one's age group</i>	Marx & Goff (2005)	Q4.1-Q.4.4 $\alpha = .77$	Q4.1—Q4.4 $\alpha = .87$	Q1.15; Q1.16

	Stigma consciousness <i>awareness of the negative representations associated with the age group</i>	Brown & Pinnel (2003)	Q4.5-Q4.7 $\alpha = .73$	Q4.5-Q4.7 $\alpha = .67$	-
	Stereotype content model <i>the degree in which older people are typically perceived to be competent or warm</i>	Fiske et al. (2002)	Q5	Q5	-
	Identification with old age <i>the degree in which individual's believe that they belong to the age group and that this is important for their self-concept</i>	Abrams et al. (2006)	Q6.1-Q6.3 $\alpha = .74$	Q6.1-Q6.3 $\alpha = .75$	-
Reactions to the TEC	Reactions to the TEC <i>opinion regarding the TEC experience</i>	Adapted from Velada (2009)	-	Q19	-
Demographics	Age, gender, place of living, people living with, work and leisure situation, education, habit to fill questionnaires	Original items	-	-	-

Note: the psychometric values of all the scales for each technology evaluated were appropriate and proximal of the pre-post results (more information available by contact with the authors)

α = Chronbach alpha; r = Pearson correlation (based on TEC questionnaire results)

* $p < .05$

6. TEC 3 feedback

6.1 Description of the Target Group

The target group of the TEC organized in Denmark was constituted by direct users: people that will use in real life the technology presented (the one which action will generate first and compulsory electronic data for future use/interpretation).

The TEC involved 9 participants from Denmark. All of the participants were female and they had a mean age of 73.22 (SD = 9.76). The majority of the respondents (77.8%) reported to live independently in their community mostly by themselves (66.7%) or with a marital partner (33.3%). 75% were retired from work and none of them use a day center in a regular basis. They hold in mean 10 years of education (SD = 6.73) and the majority of them (66.6%) rated their health from good to very good.

6.1.1 Previous experience with technology

6.1.1.1 Use of technology

100% of the participants in the TEC stated that they use technological devices in their daily living in the pre and post questionnaire.

6.1.1.2 Types of devices used

Table 2 presents a list of the technological devices TEC participants referred to use in their daily living. Participants use in a regular basis different types of home appliances such as the TV, remote control, and the coffee maker. It is also important that participants in the TEC also referred a frequent use of the mobile phone and the internet.

Table 2. Frequency of use of different type of devices regularly used by TEC users (n = 9) (1 = never; 2 = a few times during the year; 3 = once a month; 4 = every week; 5 = everyday)			
Types of devices used	Before TEC		
			95% CI

	M	SD	IL	SL
TV	5.00	0.00	-	-
Remote control	5.00	0.00	-	-
Internet	4.56	1.33	3.53	5.58
Mobile phone	4.44	1.33	3.42	5.47
Coffee maker	3.78	1.72	2.46	5.10
CD	3.67	1.23	2.73	4.61
Dishwasher	3.67	2.00	2.13	5.20
Laptop	3.33	1.87	1.90	4.77
Digital camera	2.89	1.83	1.48	4.30
Microwave	2.78	2.11	1.16	4.40
Desktop computer	2.43	1.90	0.67	4.19
DVD	2.33	1.50	1.18	3.49
Devices for the disabled	2.33	2.00	0.80	3.87
Computer (e.g. Solitaire)	1.89	1.76	0.53	3.24
GPS	1.78	1.20	0.85	2.70
Video Telephony	1.67	0.87	1.00	2.33
Other	1.67	1.63	-0.05	3.38
Alarm system	1.00	0.00	-	-
Note: M: Mean; SD: Standard deviation; CI: confidence interval; IL: inferior limit; SL: superior limit. Values presented in this table refers to answers in the pre-questionnaire				

6.1.2 TAM2

6.1.2.1 Pre-post comparison

The analyses of the results revealed a significant negative effect of participation in the TEC in the intention to use technologies in general¹, ease of use², useness³, self-efficacy⁴ and enjoyment⁵.

¹ $z = -1,890, p = .030$

² $z = -1,693, p = .045$

Despite the significant negative effect of participation in TEC regarding the 5 dimensions mentioned above, the results reveal still medium levels of response in these variables and low levels of anxiety regarding the use of technology.

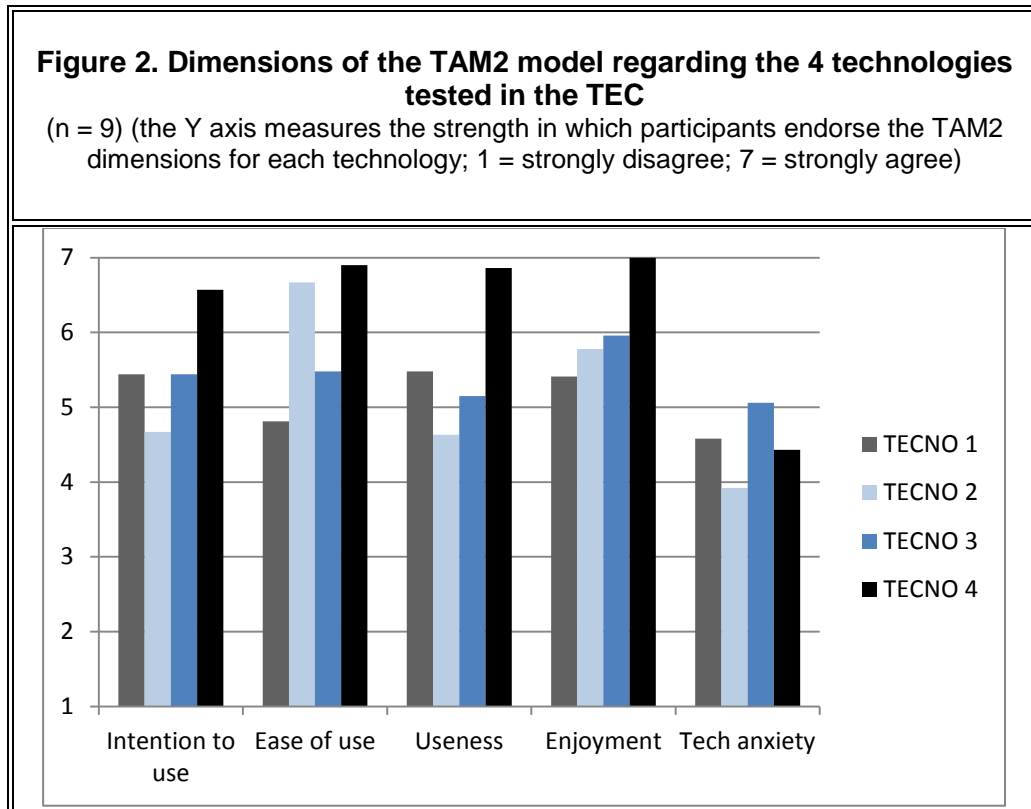
³ $z = -1,973, p = .025$

⁴ $z = -1,781, p = .038$

⁵ $z = -2,019, p = .022$

6.1.2.2 Evaluation of the four technologies tested during the session

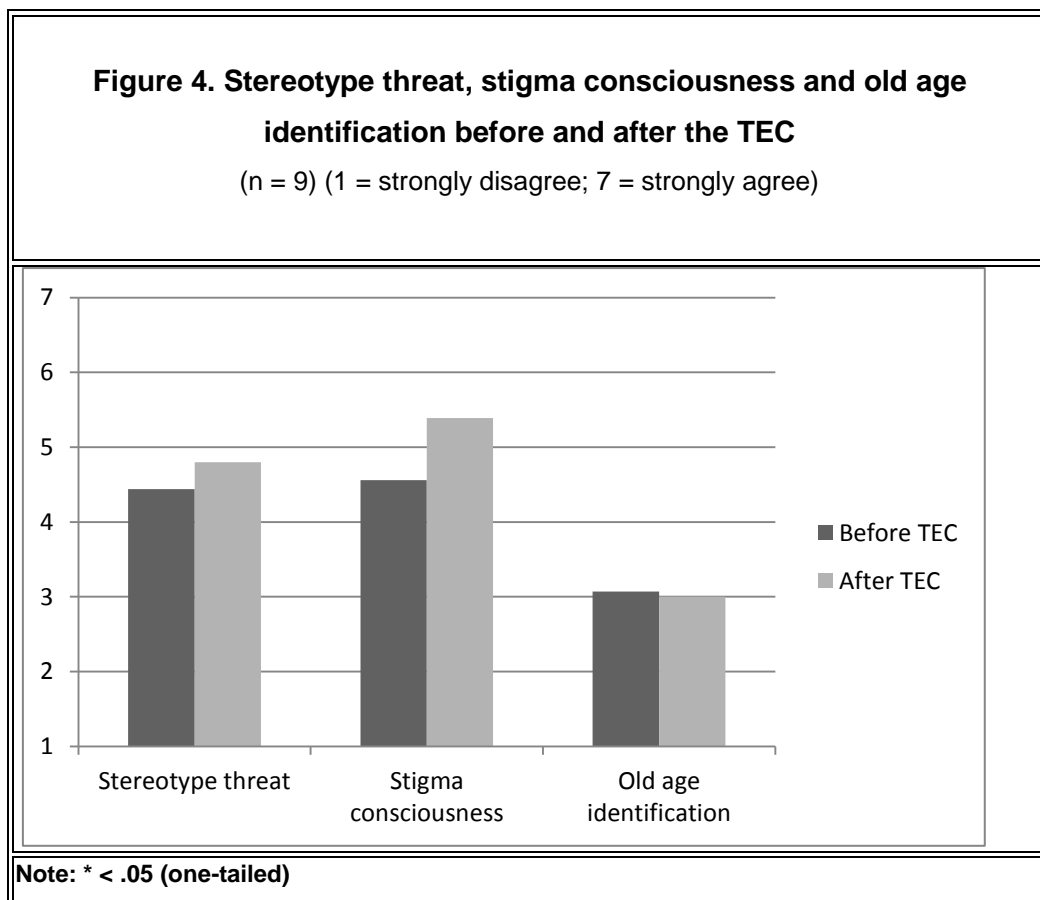
In this point, more than comparing the relative perceptions of the different technologies tested, we were particularly interested in the overall evaluation of the technologies. The analyses revealed a positive overall opinion with high intention to use, perceived ease, useness and enjoyment levels. Anxiety regarding the use of technologies was at a medium level (Figure 3).



6.1.3 Stereotypes of old age and technologies

6.1.3.1 Pre-post comparison

The analyses of the results showed that participants experienced a medium level of stereotype threat regarding the use of technologies and that they have had a medium consciousness level of being stigmatized due to their age. Furthermore, results also revealed a low level of identification with the old age group.

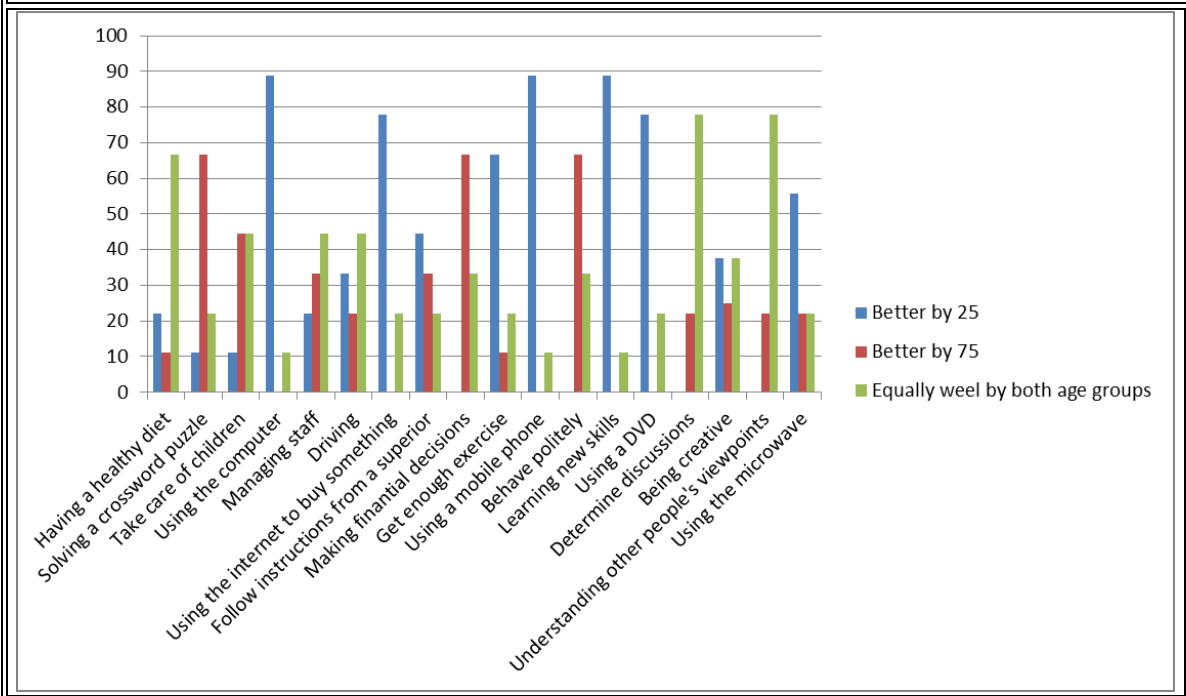


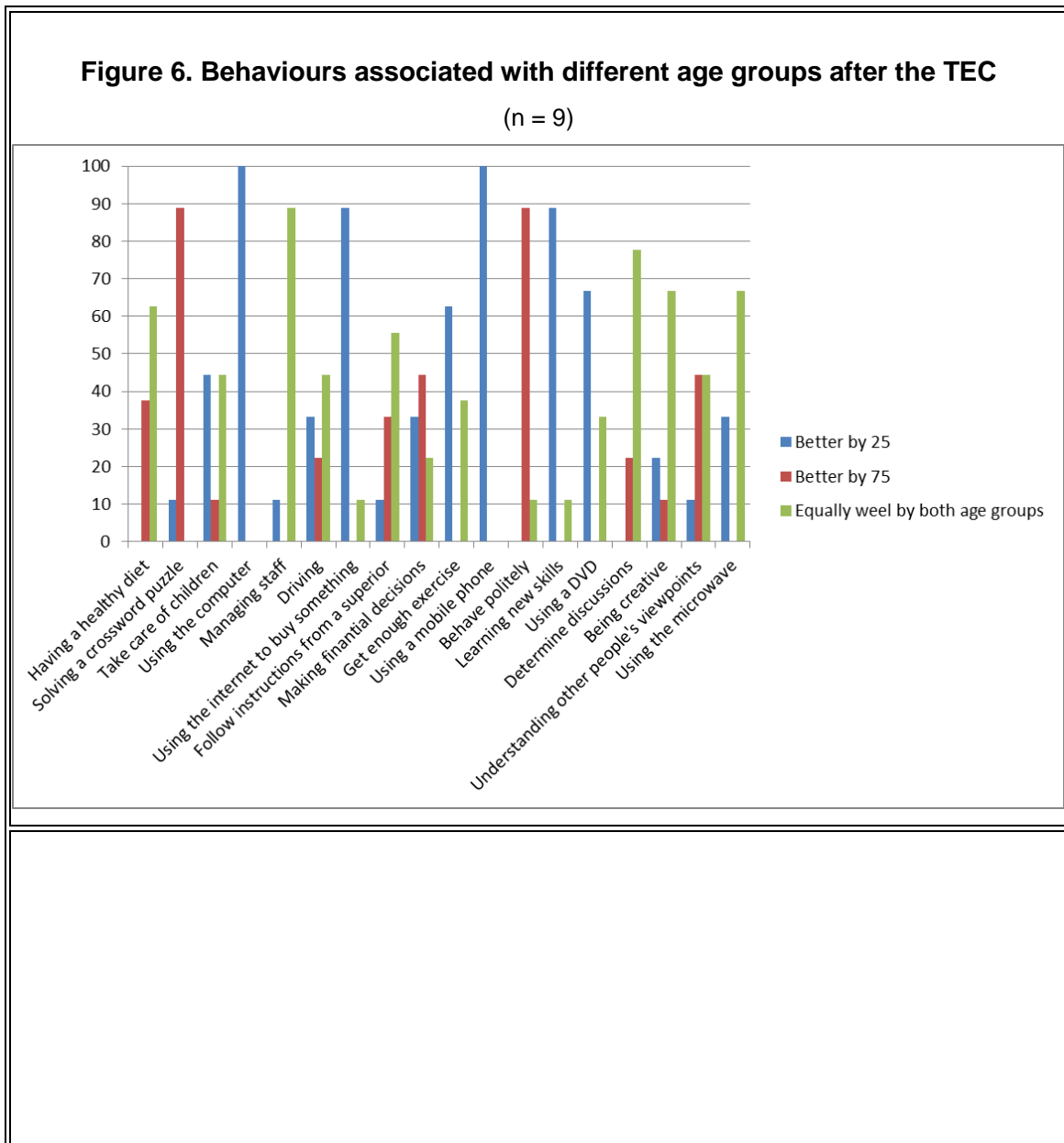
In the pre-post evaluation questionnaire we were also interested in evaluating whether the participation in the TEC could have a significant impact on the stereotypic perceptions of older people and use of technology. The analyses of the pre-questionnaire revealed that the participants associated the use of technologies with the 25 year old group: using the computer (88.9%), using a mobile phone (88.9%), using the internet to buy something (77.8%) and using a DVD (77.8%). Regarding interpersonal behaviours, participants associated the capacity of behave politely to the 75 year old group (66.7%) and related other interpersonal behaviours to both age groups: determine discussions (77.8%) and understand other people's viewpoints (77.8%).

These stereotypic representations did not change in a significant way after the participation in the TEC (Figure 4 and 5).

Figure 5. Behaviours associated with different age groups before the TEC

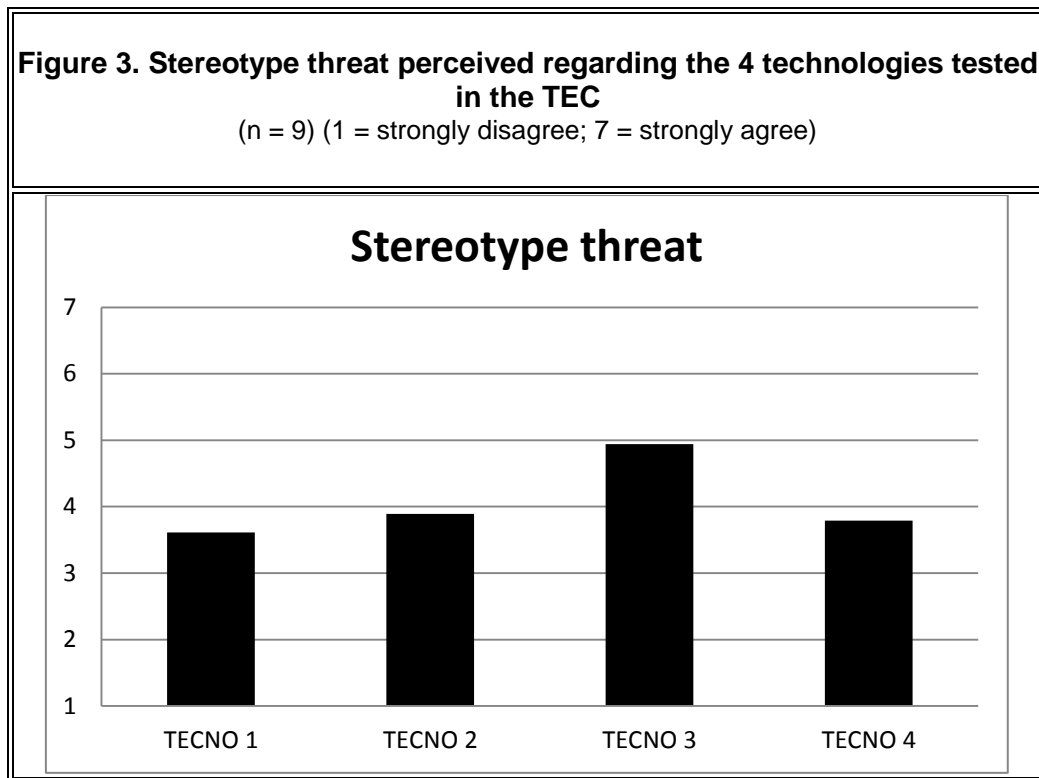
(n = 9)





6.1.3.2 Evaluation of the Stereotype threat related with the use of the 4 technologies during the session

Participants revealed an overall medium level of perceived threat regarding the 4 technologies tested in the TEC. The technology 3 “InCare” is associated with the higher level of perceived threat.



6.1.4 Reactions to the TEC

When asked about their collaboration in TEC, participants revealed different opinions: the majority of them (n=3) considered it very nice and exciting, 2 of them stated that it was difficult to answer the questionnaire and one of them considered that the experience wasn't nice.

Table 3. Qualitative evaluation regarding the TEC after participation (n = 6)
It was very nice and exciting (n=3)
It was difficult to answer the questionnaire (n=2)
It wasn't nice (n=1)

6.1.5 Part-Conclusion

The TEC 3 developed in Denmark revealed a significant decrease in the intention to use technologies in general, ease of use, usefulness, self-efficacy and enjoyment. However, participants still reported medium levels of response regarding these variables and revealed low levels of anxiety regarding the use of technology. Also, although participants did not show any improvement in their intentions to use technology in general in the future, they actually rated a high degree of intention to use the specific technologies tested in the session.

Either way, these results partially contradict our expectations regarding the purpose of the TEC experience and can be possibly explained by some factors: first of all, older persons may have not transferred the way they felt regarding the use of the four technologies tested in the session to their overall opinion of technology use in general. Hence, despite they had a positive evaluation of the technologies in the session; they did not show an improvement in their attitudes and intentions regarding other types of technologies. Also, these results may also reflect the type of method used in the evaluation procedure in the sense that some participants said that they had difficulties answering the questionnaires. It would be better to test other type of methods to evaluate the TEC experience, namely for instance by conducting in site focus-group with the participants.

Another limitation of this TEC is the small size of the sample (n=9) and also its homogeneity (e.g. all the participants were female), which might have influenced the reliability of the statistical analyses

7. Glostrup TEC feedback

7.1.1 Previous experience with technology

7.1.1.1 Use of technology

100% of the participants in the TEC that answered this question stated that they use technological devices in their daily living in the pre and post questionnaire.

7.1.1.2 Types of devices used

Table 2 presents a list of the technological devices TEC participants referred to use in their daily living. Participants use in a regular basis different types of home appliances such as the remote control, TV, and the coffee maker. It is also important that participants in the TEC also referred a frequent use of the mobile phone and the internet.

Table 4. Frequency of use of different type of devices regularly used by TEC users				
(n = 14) (1 = never; 2 = a few times during the year; 3 = once a month; 4 = every week; 5 = everyday)				
Types of devices used	Before TEC			
	M	SD	95% CI	
IL			SL	
TV	4.77	0.44	4.50	5.03
Remote control	4.69	1.11	4.02	5.36
Mobile phone	4.62	1.12	3.94	5.29
Internet	4.54	1.20	3.81	5.26
Other	4.44	1.33	3.42	5.47
Coffee maker	4.14	1.23	3.43	4.85
CD	3.69	1.65	2.69	4.69
DVD	3.62	1.76	2.55	4.68
Computer	3.57	1.74	2.57	4.58

Dishwasher	3.14	1.83	2.08	4.20
Laptop	3.08	2.02	1.86	4.30
Microwave	3.07	1.73	2.07	4.07
Desktop computer	3.00	1.83	1.90	4.10
Devices for the disabled	2.93	1.94	1.81	4.05
Video telephony	2.69	1.60	1.72	3.66
Digital camera	2.62	1.61	1.64	3.59
Alarm system	2.14	1.88	1.06	3.23
GPS	2.08	1.32	1.28	2.87
Note: M: Mean; SD: Standard deviation; CI: confidence interval; IL: inferior limit; SL: superior limit. Values presented in this table refers to answers in the pre-questionnaire				

7.1.2 TAM2

7.1.2.1 Pre-post comparison

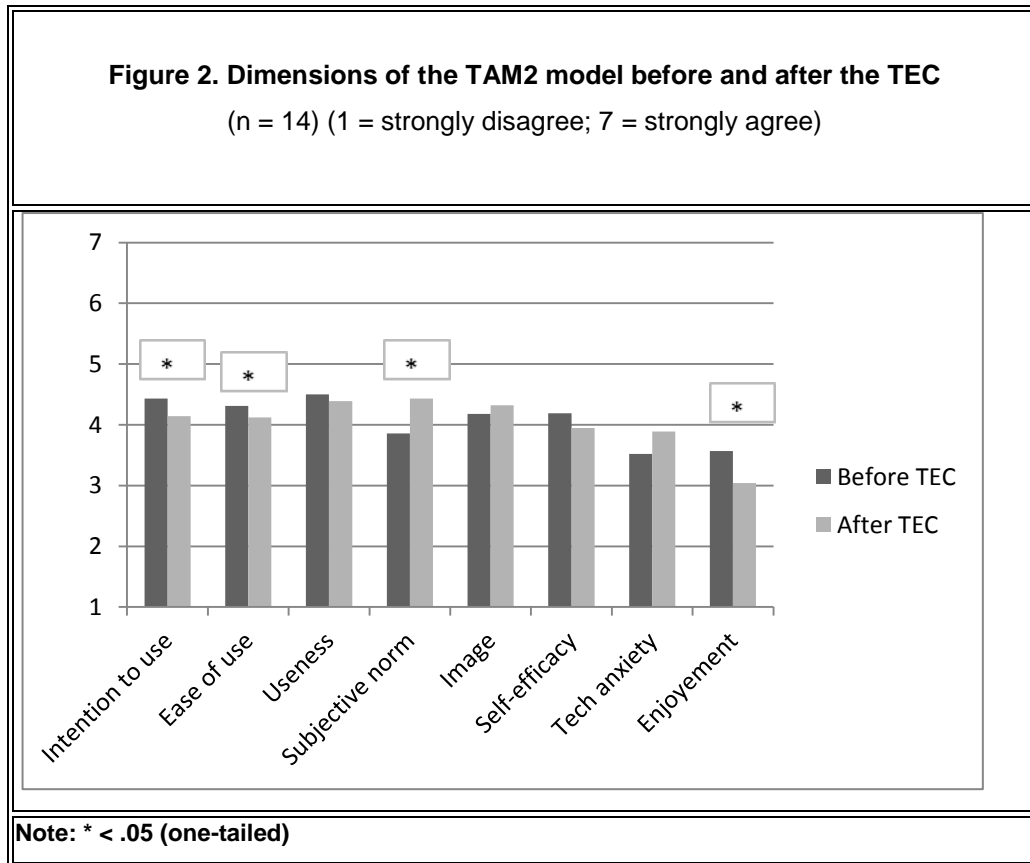
The analyses of the results revealed a significant positive effect of participation in the TEC in the subjective norm⁶ and a significant negative effect in the intention to use technologies⁷, ease of use⁸ and enjoyment⁹. More specifically, after the TEC, participants revealed an increased perception that other people think that they should use technological equipment in their daily lives. Despite the significant negative effect of participation in TEC regarding the 3 dimensions mentioned above, the results refer low levels of anxiety regarding the use of technology.

⁶ $t(13) = -1,847, p = .044$

⁷ $t(13) = 1,472, p = .083$ (albeit at marginal levels)

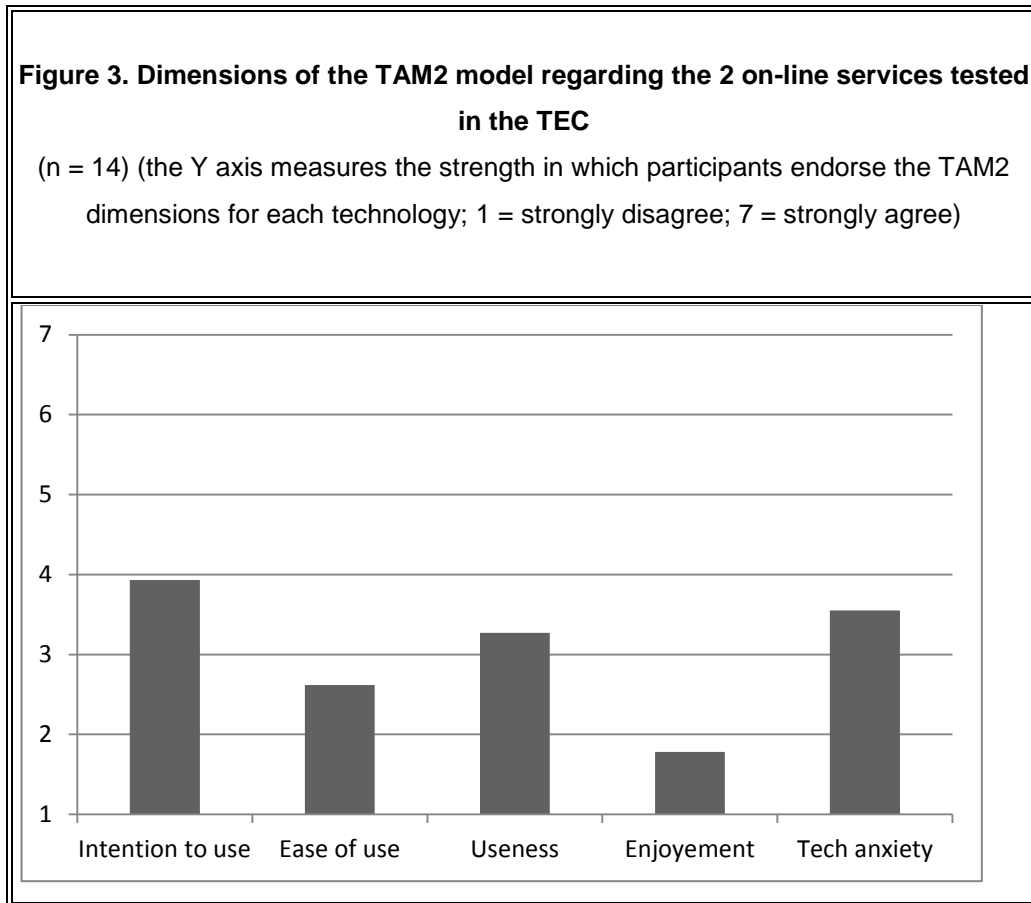
⁸ $t(13) = 1,749, p = .052$ (albeit at marginal levels)

⁹ $t(13) = 2,393, p = .017$



7.1.2.2 Evaluation of the two on-line services during the session

The application of a questionnaire during the session allowed an overall evaluation of the two on-line services tested. These analyses revealed a medium level of intention to use the technologies tested and of anxiety regarding its use. The levels of ease of use and enjoyment regarding these two on-line services were low.

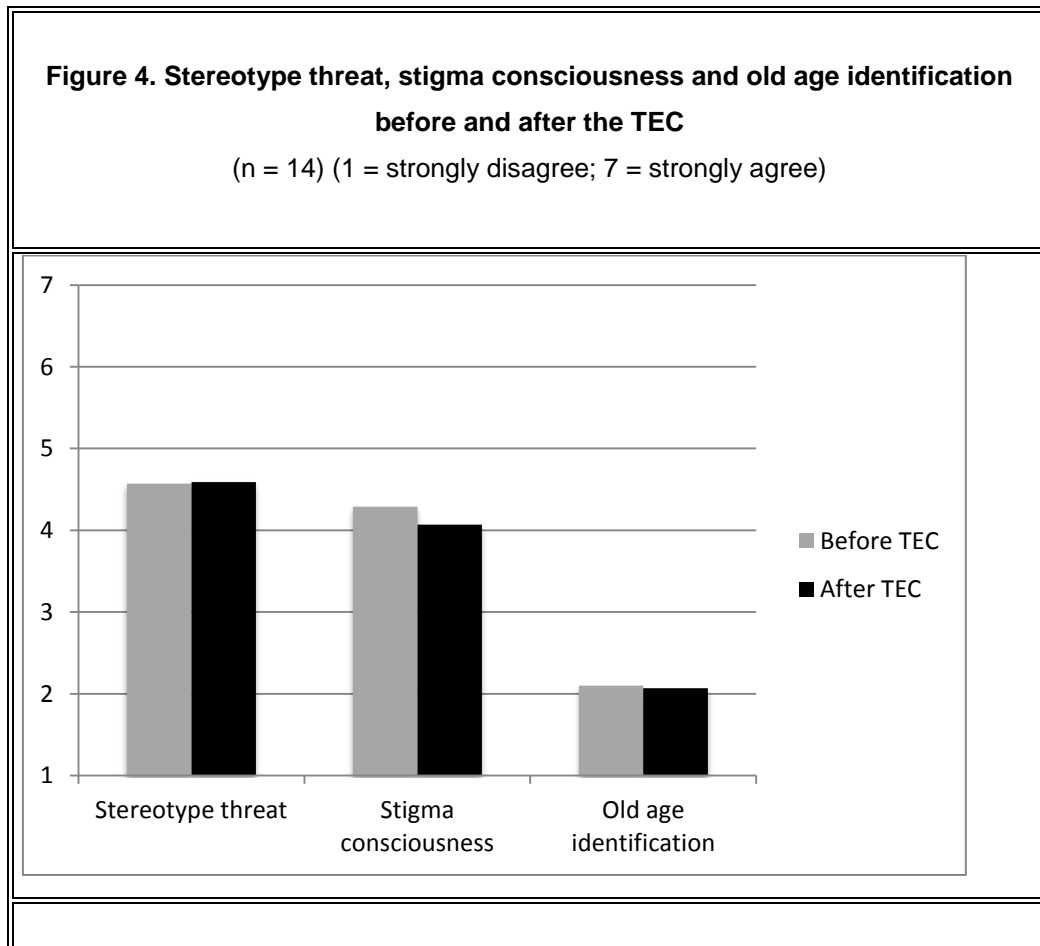


7.1.3 Stereotypes of old age and technologies

7.1.3.1 Pre-post comparison

The analyses of the results showed that participants experienced a medium level of stereotype threat regarding the use of technologies and that they have had a medium consciousness level of being stigmatized due to their age. Furthermore, results also revealed a low level of identification with the old age group.

Participation in the TEC did not have a significant impact in these three dimensions. However, participants revealed a slightly decrease of consciousness of being stigmatized due to their age after the TEC.



In the pre-post evaluation questionnaire we were also interested in evaluating whether the participation in the TEC could have a significant impact on the stereotypic perceptions of older people and use of technology. The analyses of the pre-questionnaire revealed that the participants associated the use of technologies with the 25 year old group: using the computer (71.4%), using the internet to buy something (71.4%) and learning new skills (71.4%). However, in some cases a significant percentage of participants also associated the use of specific technologic devices with both age groups: using the microwave (78.6%), using a DVD (58.3%) and using a mobile phone (50%).

These stereotypic representations did not change in a significant way after the participation in the TEC (Figure 4 and 5).

Figure 5. Behaviours associated with different age groups before the TEC

(n = 14)

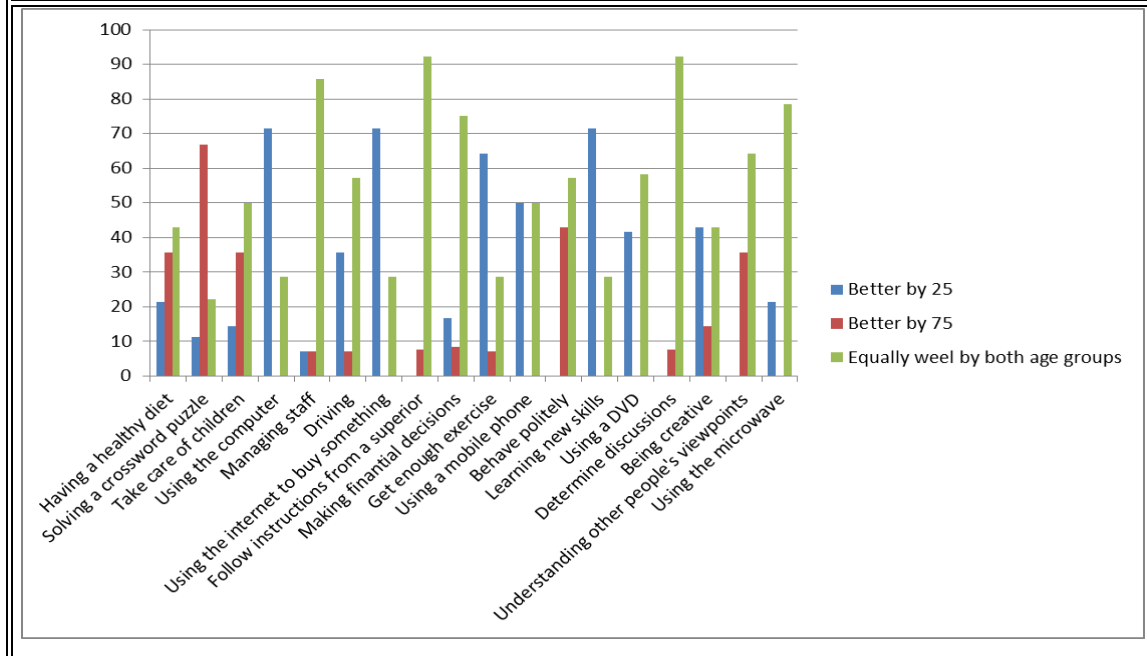
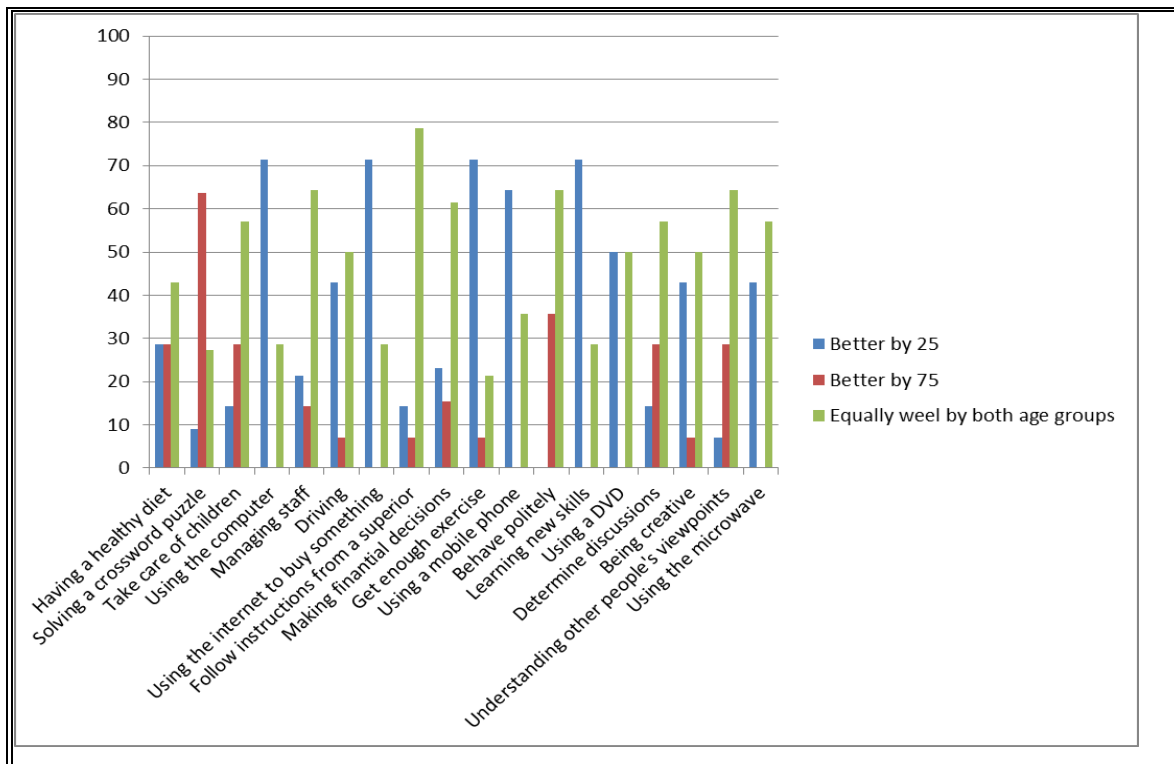


Figure 6. Behaviours associated with different age groups after the TEC

(n = 14)



7.1.3.2 Evaluation of the Stereotype threat related with the use of the 2 on-line services during the session

Participants revealed an overall low level of perceived threat regarding the 2 technologies tested in the Glostrup TEC (mean=2.67; standard deviation = xx).

7.2 Part -Conclusion

The Glostrup TEC had a positive influenced in participant’s perception that other people think that they should use technological equipment in their daily lives.

However, the participation on TEC had a negative influence in the intention to use technologies, its ease of use and the enjoyment associated with the interaction with technology. These results contradict our expectations regarding the purpose of the TEC experience and can be possibly explained by the choice of the technologies tested in this TEC. In fact, the direct contact with the two on-line services may not represent an appealing experience to the older people for several reasons (e.g. older people may not have perceived these on-line services as important for them in their daily lives; the design of the platforms may not has been perceived as user-friendly).

8. Conclusion

The overall goals of the WP2; engaging with final users, focusing each TEC on few technologies, promoting technologies, providing ICT industry with direct user experience, and an enabling direct brokerage between users and solution providers was achieved in the two TEC's conducted in Denmark.

However the hoped for positive effects on Technology Acceptance Model and the two goals of heightened perceived usefulness of technology and perceived ease of use were not evident in the pre-post analysis. This could be due to a number of factors amongst them prior to TEC knowledge of technology.

There were some differences in the two TECs results, mainly to do with the specific technology tested in the session. In the TEC 3 participants actually rated highly the intention to use the specific technology in the future. The Glostrup TEC had a positive influence on participant's perception that other people think that they should use technological equipment in their daily lives.

The participation in the Danish TECs had a negative influence on the intention to use technologies, its ease of use and the enjoyment associated with the interaction with technology. These results contradict our expectations regarding the purpose of the TEC experience and can be possibly explained by the choice of the technologies tested in this TEC.

Either way, these results partially contradict our expectations regarding the purpose of the TEC experience and can be possibly explained by some factors: first of all, older persons may have not transferred the way they felt regarding the use of the six technologies tested in the session to their overall opinion of technology use in general. Hence, despite they had a positive evaluation of the technologies in the session; they did not show an improvement in their attitudes and intentions regarding other types of technologies. Also, these results may also reflect the type of method used in the evaluation procedure in the sense that some participants said that they had difficulties answering the questionnaires. It would be better to test other type of methods to evaluate the TEC experience, namely for instance by conducting in site focus-group with the participants.

Another limitation of this TEC is the small size of the two TECs sample size of filled out Questionnaires; (n=9) in TEC3 and (n=15) in Glostrup TEC

9. References

- Abrams, D., Bryant, J., & Eller, A. (2006). An age apart: The effects of intergenerational contact and stereotype threat on performance and intergroup bias. *Psychology and Ageing*, 4(21), 691-702.
- Broady, T, Chan, A., & Caputi, P. (2010). Comparison of older and younger adult's attitudes towards and abilities with computers: Implications for training and learning. *British Journal of Educational Technology*, 3(41), 473-485.
- Brown, R. P., & Pinel, E.C. (2003). Stigma on my mind: Individual differences in the experience of stereotype threat. *Journal of Experimental Social Psychology*, 39, 626-633.
- Chaffin, A., J., & Harlow, S., D. (2005). Cognitive learning applied to older adult learners and technology. *Educational Gerontology*, 31, 301-329.
- Davis, F. D. (1986). A technology acceptance model for empirically testing new end-user information systems: Theory and results. Doctoral dissertation. Cambridge, MA: MIT Sloan School of Management.
- Fiske, S.T., Cuddy, A. J. C., Xu, J., & Glick, P. (2002). A model of (often mixed) stereotype content: competence and warmth respectively follow from perceived status and competition. *Journal of Personality and Social Psychology*, 6(82), 878–902.
- Hawthorn, D. (2007). Interface design and engagement with older people. *Behaviour and Information Technology*, 26, 4, 333–341.
- Hernández-Encuentra, E., Pousada, M., & Gómez-Zúñiga, B. (2009). ICT and older people: beyond usability. *Educational Gerontology*, 35, 226-245.
- Marx, D.M., & Goff, P.A. (2005). Clearing the air: The effect of experimenter race on target's test performance and subjective experience. *British Journal of Social Psychology*, 44, 645-657.
- Matlabi, H., Parker, S., McKee, K. (2012). Experiences of extra care housing residents aged fifty-five and over with home-based technology. *Social Behavior and Personality*, 40(2), 293-300.
- Patomella, A., H., Kottorp, A., Malinowsky, C., & Nygard, L. (2011). Factors that impact the level of difficulty of everyday technology in a sample of older adults with and without cognitive impairment. *Technology and Disability*, 23, 243-250.
- Swift, H., Abrams, J., & Marques, S. (2013). Threat or boost? Social comparison affects older people's performance differently depending on task domain. *The Journal of Gerontology, Series B: Psychological Sciences and Social Sciences*, 10.
- Timmermann, S. (1998). The role of information technology in older adult learning. *New Directions for Adult and Continuing Education*, 77, 61–71.
- Velada, R., Caetano, A., Bates, R., & Holton, E. (2009). Learning transfer in training context – Validation of the learning transfer system inventory in Portugal. *Journal of European Industrial Training*, 7(33), 335-356.
- Venkatesh, V. (2000). Determinants of perceived ease of use: integrating control, intrinsic motivation, and emotion into the technology acceptance model. *Information Systems Research*, 4(11), 342-365.

Venkatesh, V., & Davis, F. (2000). A theoretical extension of the technology acceptance model: four longitudinal field studies. *Management Science*, 2(46), 186-204.

Wong, A. et al. (2012). Technology Acceptance for an Intelligent Comprehensive Interactive Care (ICIC) System for Care of the Elderly: A Survey-Questionnaire Study. *PloS ONE*, 7. Retrieved from <http://www.plosone.org/article/info%3Adoi%2F10.1371%2Fjournal.pone.0040591>

10. Annex A

