Present barriers, emergent and future needs in digital society

- In perspective of People with Disabilities (PwD) and elderly

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The aim of this study is to identify present barriers, emergent and future needs in terms of analysis, acquisition and reinforcing of digital competences bridging the worlds of education, work and wider social participation. The development of this questionnaire is based on the State of Art – report that is created from the qualitative analysis of the interviews of users, educators, ICT and ICT AT developers and service providers as well as the vast literature review.

The survey was carried out by questionnaire that included collection of quantitative and qualitative data. Quantitative data was collected by statement options utilising the Likert scaling. The items generation was based on the main results of the State of Art. Qualitative data was collected by open questions that revealed respondents' ideas and opinions of user's needs (present and future needs), usability of technology (present usability and wishes for future), ICT/ITC-education (present and future), awareness of available ICT and ICT-AT solutions (present policy issues, future changes in policy issues)

The survey was in eForm and delivered by the Entelis – project partners to respondents, the selection of respondents was purposeful. The aim was to deliver the survey to five other organisations and persons involved with ICT and ICT in the education of PwD and elderly. The data collection started in December 2015 and ended in the beginning of February 2016, taking totally 2 months.

Description of respondents

The number of respondents was 51. The information of the organisations they presented is show in Table 1. There were three main categories showing that the education, research and service providers were mainly represented and that the user representation into this survey was less.

Education	16
Service providers	16
Research	11
Voluntary organisations	4
Industry business	3
User	1

Table 1. Respondents' organisations.

The respondents represented 21 countries, the number of respondents varied from 1 to 6.

Country	*n*	*%*
Australia	4	8
Austria	2	4
Belgium	3	6
Canada	1	2
Croatia	1	2
Cyprus	3	6
Finland	5	10
France	1	2
Germany	1	2
Greece	1	2
Ireland	3	6

Italy	6	12
Netherlands	2	4
Portugal	2	4
Republic of Macedonia	3	6
Slovenia	4	8
Spain	3	6
Sweden	1	2
Switzerland	2	4
United Kingdom	2	4
United States	1	2
Total	51	100

Table 2. Orientation of respondents (N=51)

User-needs in the eyes of respondents

There were 13 statement options concerning the user-needs. In Table 3. the responses have been combined together. The statements are fully listed after the table.

Table 3. User-needs in the view of technology, ICT-AT support and education (%)

In *Technology (ICT/ICT – AT) helps the daily life of PwD/the elderly* – statement, most of the respondents very strongly agreeing that this is true none saw that it would not help, the agreement is almost statistically significant. Though the taught that *digital services enhance participation into social life* mainly was agreed there is more doubt among the respondents (n=6) than it is not doing this.

The safety of people with disability *can be improved by the use of new technology, r*espondents saw this to be true while most of them agreed (n=49) with the statement. Majority of respondents (n=50) considered that *The assistive technology can support longer independent living of people with disability and the elderly.*

Taking care of the safety and security of people with disability/ the elderly through technology is acceptable if they are not able to take care of themselves. There was a slight transfer in this statement in respondents' agreements, majority agreeing (n=39) but only 25 % strongly agreeing, more neural (n=9) and disagreeing (n=3) answers.

Technology will not help PwDs or the elderly to cope better in their daily life- statement divided the respondents a little. The majority (80%) thought that technology will help PwDs or elderly cope better in their daily life, but there was a larger disagreement (10%) and those who could not say (10%).

Majority (n=47) of the respondents saw that *Technology helps Pwd/ the elderly to maintain contact with their family and friends. Monitoring PwD/the elderly through technology is acceptable if it strengthens the feeling of safety.* The respondents' agreement that monitoring is acceptable was not so strong, though most of the respondents (n=27) agreed that it is acceptable there were more stating not yes or no (n=12) and few disagreeing (n=2).

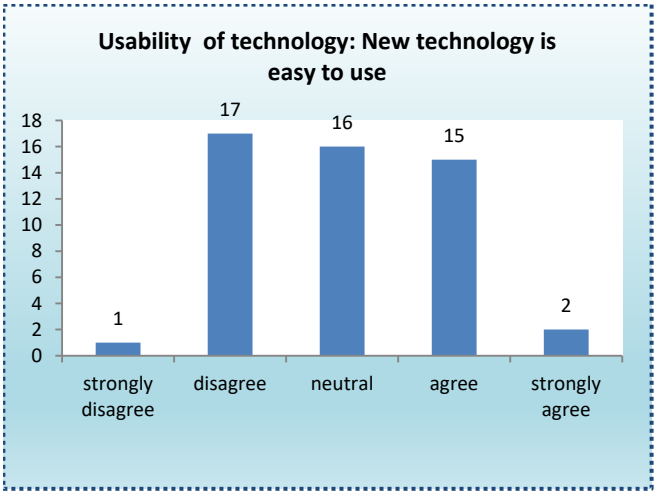
Most of the respondents (n=47) saw that *ICT/ ICT-AT skills and knowledge facilitate public involvement of PwD/ the elderly (such as travelling, hobbies, social networking etc.).* Almost all (n=50) considered that *ICT/ ICT-AT support the working opportunities of people with disability.* In *Using job-related ICT -AT is beneficial to the productivity and self-esteem of people with disability*- statement, there were only few respondents (n=4) that could not agree or disagree with this statement, most of respondents agreeing that job-related ICT-AT can be beneficial.

ICT and ICT AT education is included in primary education of PwDs in my country - statement reviled the reality of the differences between the countries and more over the vision that respondents had about the inclusion. Even respondents from the same country their opinion or knowledge of this statement differed from agreement to disagreement (Australia, Belgium, Cyprus, Italy, Portugal, Macedonia, Spain, USA). *There is no official ICT and ICT education for elderly in my country,* 68% considered that this is true in their country, but these answers were conflicting while the respondents even from the same country did not agree if there is official or is not official ICT and ICT-AT education for elderly: Australia, Belgium, Finland, Italy, Slovenia,

Usability of technology

1. **New technology is easy to use**

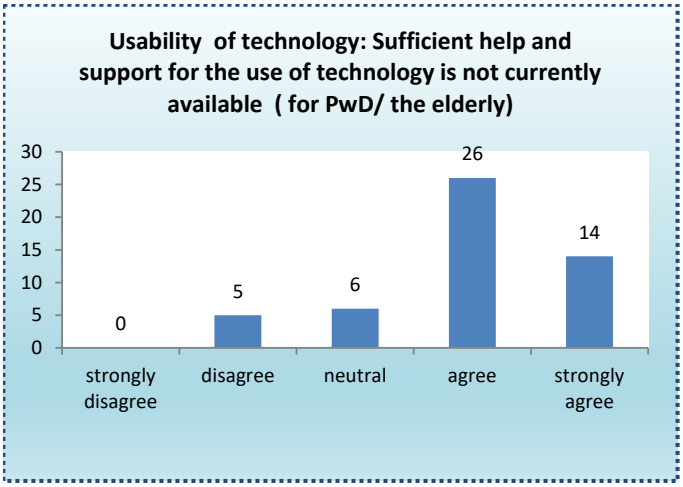
	n	*%*
strongly disagree	1	2
disagree	17	33
neutral	16	31
agree	15	29
strongly agree	2	4
Total	51	100



This statement divided the respondents, 19 disagreeing and 17 agreeing. New technology is then considered for some easy to use (n=17) and for the others not easy (n=19). And 16 did not state either of the options. No agreement between representatives of each country is seen.

2. **Sufficient help and support for the use of technology is not currently available (for PwD/the elderly)**

	n	*%*
strongly disagree	0	0
disagree	5	10
neutral	6	12
Agree	26	51
strongly agree	14	27
Total	51	100



Most of the respondents (n=40) think that there is not enough help and support for the use of technology, though there are few thinking that there is (n=5).

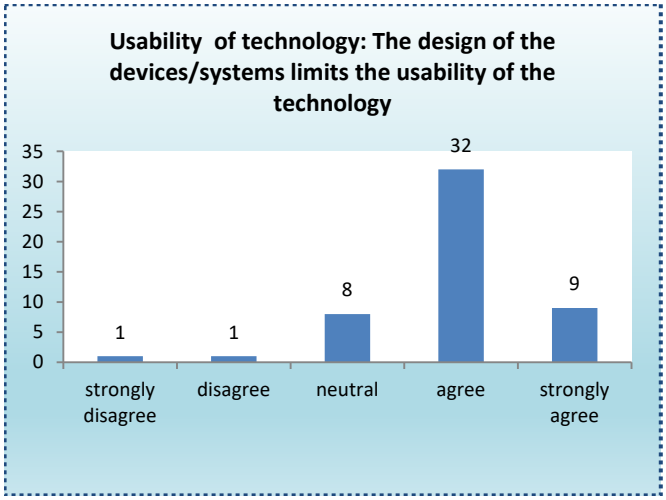
3. **Digital services are accessible for all**

Digital services are seen not to be accessible for all (n=36) and only tree respondents considered them accessible.

	n	*%*
strongly disagree	11	22
disagree	25	49
neutral	12	24
agree	3	6
strongly agree	0	0
Total	51	100

4. The design of the devices/systems limits the usability of the technology

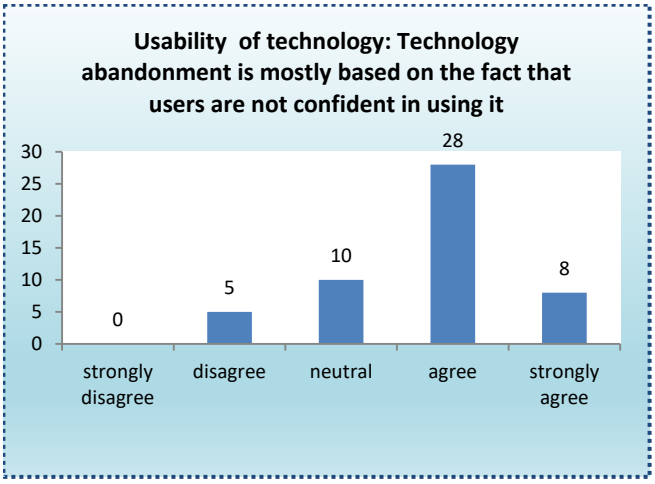
	n	*%*
strongly disagree	1	2
disagree	1	2
neutral	8	16
agree	32	63
strongly agree	9	18
Total	51	100



Most of the respondents (n=41) saw that design limits the usability of the technology.

5. Technology abandonment is mostly based on the fact that users are not confident in using it

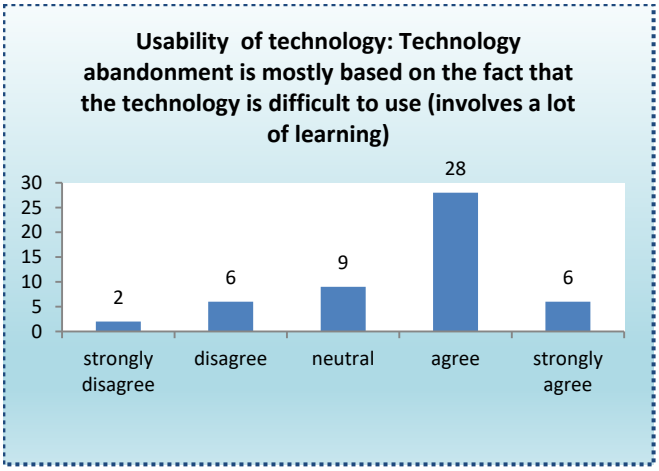
	n	*%*
strongly disagree	0	0
disagree	5	10
neutral	10	20
Agree	28	55
strongly agree	8	16
Total	51	100



There were five of respondents not agreeing the statement and ten not agreeing/ disagreeing. Still the majority (n= 36) agrees that technology abandonment can be mostly based on not being confident in using it.

6. Technology abandonment is mostly based on the fact that the technology is difficult to use (involves a lot of learning)

	n	*%*
strongly disagree	2	4
disagree	6	12
neutral	9	18
agree	28	55
strongly agree	6	12
Total	51	100

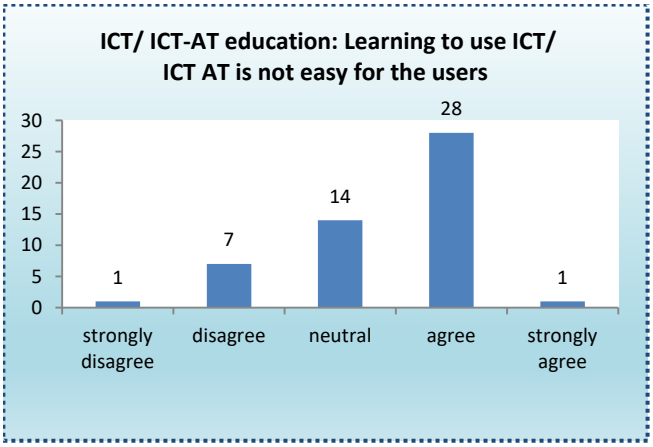


This statement divided the respondents more, eight disagreeing and nine not agreeing/ disagreeing. Still 34 agreeing that technology abandonment can be based mostly on that it is difficult to use.

ICT/ ICT-AT education

1. Learning to use ICT/ ICT-AT is not easy for the users

	n	*%*
strongly disagree	1	2
disagree	7	14
neutral	14	27
Agree	28	55
strongly agree	1	2
Total	51	100



ICT/ICT-At was considered not easy to use by most of respondents (n=29), but eight had an opposite opinion and 14 did not agree/ disagree.

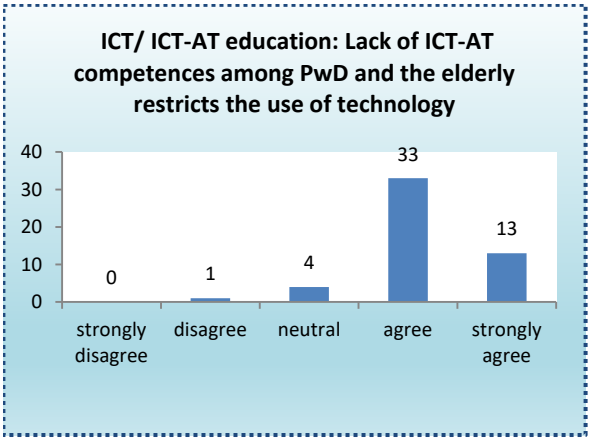
	strongly disagree	*disagree*	*neutral*	*agree*	*strongly agree*	*Total.*
Education	0	1	5	10	0	**16**
Service provider	1	3	5	7	0	**16**
Research	0	2	4	4	1	**11**
Voluntary organisation	0	0	0	4	0	**4**
Industry or business	0	0	0	3	0	**3**
I am a user	0	1	0	0	0	**1**
Total	**1**	**7**	**14**	**28**	**1**	**51**

When looking the background of respondents, there were some that thought the learning to use ICT/ICT-AT is not difficult for users (n=8).

2. Lack of ICT-AT competences among PwD and the elderly restricts the use of technology

Most of respondents (n=46) saw that lack of competences among users of ICT-AT restrict the use.

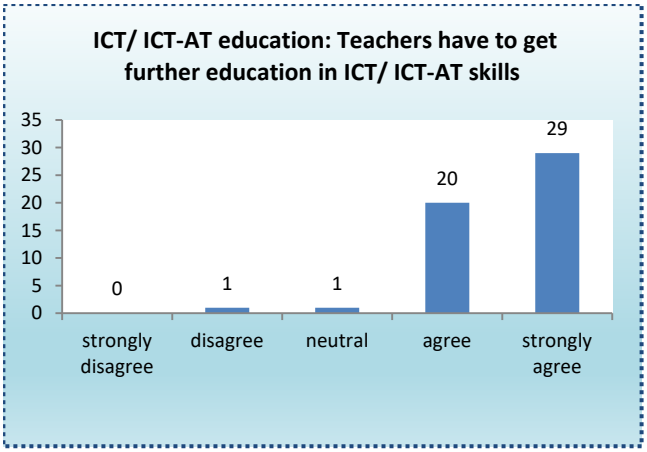
	n	*%*
strongly disagree	0	0
disagree	1	2
neutral	4	8
agree	33	65
strongly agree	13	25



Total	51	100

3. Teachers have to get further education in ICT/ICT-AT skills

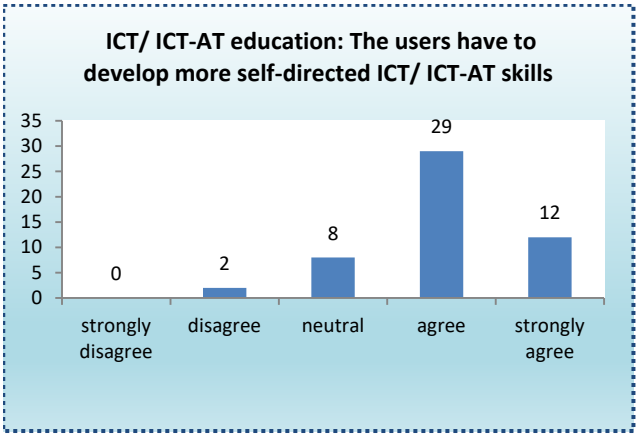
	n	*%*
strongly disagree	0	0
disagree	1	2
neutral	1	2
agree	20	39
strongly agree	29	57
Total	51	100



mand for further education of teachers were seen in these responses, strong recommendation for further education, almost all respondents supported this (n=49).

4. The users have to develop more self-directed ICT/ICT-AT skills

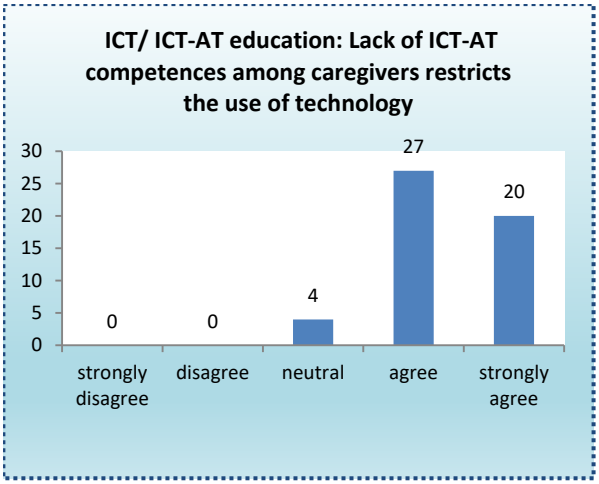
	n	*%*
strongly disagree	0	0
disagree	2	4
neutral	8	16
Agree	29	57
strongly agree	12	24
Total	51	100



The demand of self –directed ICT/ICT-AT skills were recommended by 41.

5. Lack of ICT-AT competences among caregivers restricts the use of technology

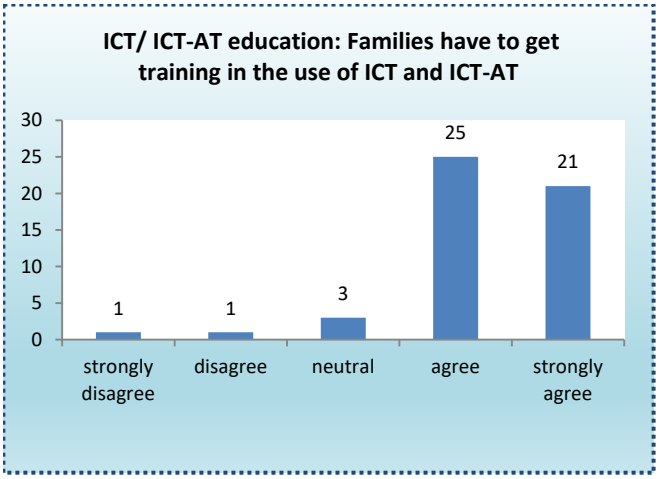
	n	*%*
strongly disagree	0	0
disagree	0	0
neutral	4	8
agree	27	53
strongly agree	20	39
Total	51	100



Lack of ICT-AT competences is seen among caregivers (n=47).

6. **Families have to get training in the use of ICT and ICT-AT**

	n	*%*
strongly disagree	1	2
disagree	1	2
neutral	3	6
agree	25	49
strongly agree	21	41
Total	51	100

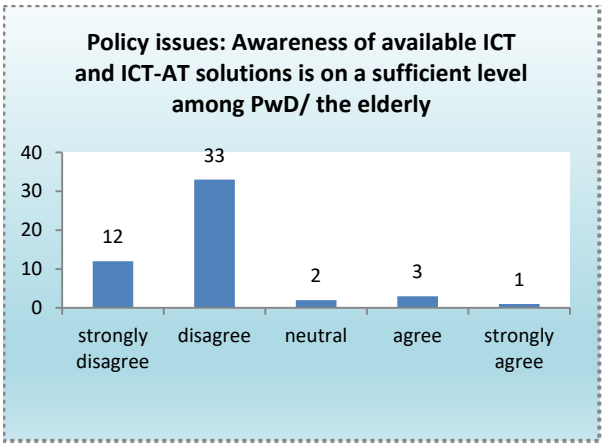


The need for training among families is recognised by respondents (n=46), only few from education and research did not agree this.

Policy issues

1. **Awareness of available ICT and ICT-AT solutions is on a sufficient level among PwD/ the elderly**

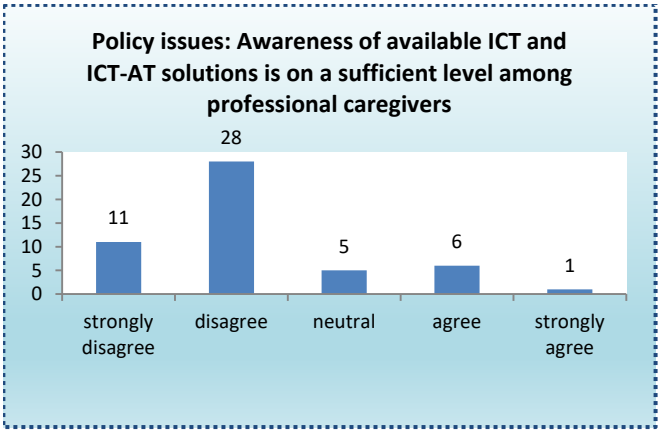
	n	*%*
strongly disagree	12	24
disagree	33	65
neutral	2	4
agree	3	6
strongly agree	1	2
Total	51	100



The agreement that awareness is on a sufficient level was not supported by most of the respondents (n=45), though there were some (n=4) that though it was.

2. **Awareness of available ICT and ICT-AT solutions is on a sufficient level among professional caregivers**

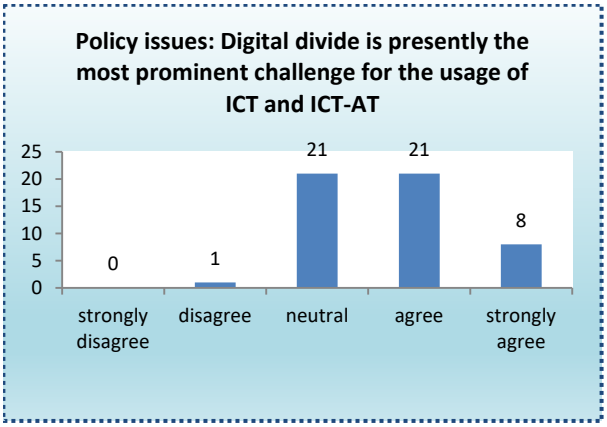
	n	*%*
strongly disagree	11	22
disagree	28	55
neutral	5	10
agree	6	12
strongly agree	1	2
Total	51	100



The agreement that awareness among caregivers is on a sufficient level was not supported by majority (n=39), but seven thought that it is.

3. Digital divide is presently the most prominent challenge for the usage of ICT and ICT-AT

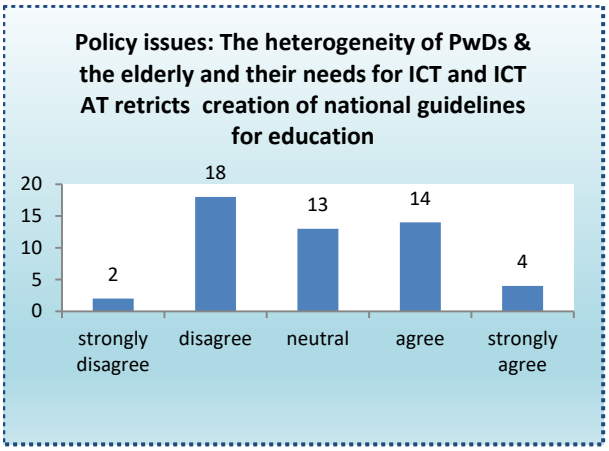
	n	%
strongly disagree	0	0
disagree	1	2
neutral	21	41
agree	21	41
strongly agree	8	16
Total	51	100



Digital divide was considered to be most prominent challenge by 57% (n=29) of the respondents. But one disagreed and 41% (n=21) did not agree/disagree. From education sector seven, service providing sector eight and from research sector four did not agree/disagree. And the only one disagreeing was from the research sector.

4. The heterogeneity of PwDs & the elderly and their needs for ICT and ICT-AT restricts creation of national guidelines for education

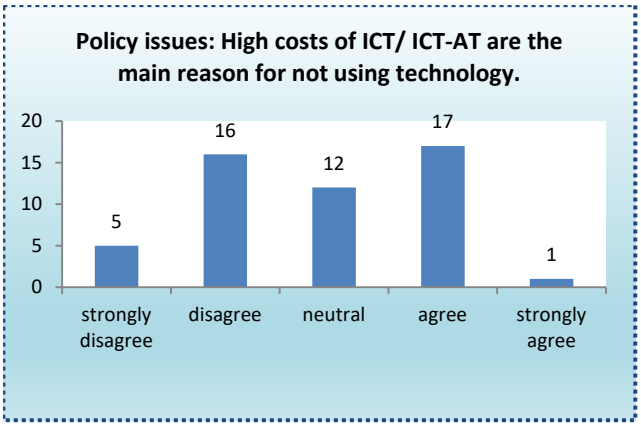
	n	%
strongly disagree	2	4
disagree	18	35
neutral	13	25
agree	14	27
strongly agree	4	8
Total	51	100



The answers to this statement showed that some support this conclusion (n=18) and some do not (n=20), also some respondent did not agree/disagree (n=13). Among the groups the answers were divided, so none of the subgroups agreed or disagreed.

5. High costs of ICT/ ICT-AT are the main reason for not using technology

	n	%
strongly disagree	5	10
disagree	16	31
neutral	12	24
agree	17	33
strongly agree	1	2
Total	51	100

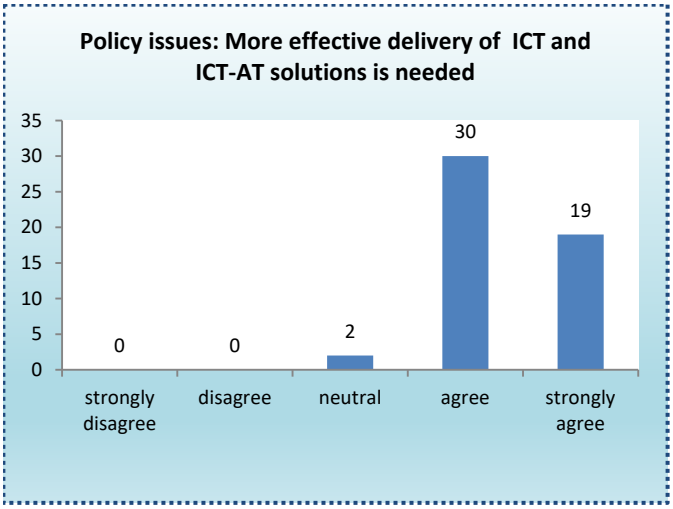


The variation of answers was high [CI 95% -0,44; 0,16]. And there were almost equal number of respondents stating that high costs limit the use of technology (n=18) and those who did not considers costs being the main reason (n=21).
All representative of voluntary organisations (n=4) agreed that the costs limit the use of technology.

6. More effective delivery of ICT and ICT-AT solutions is needed

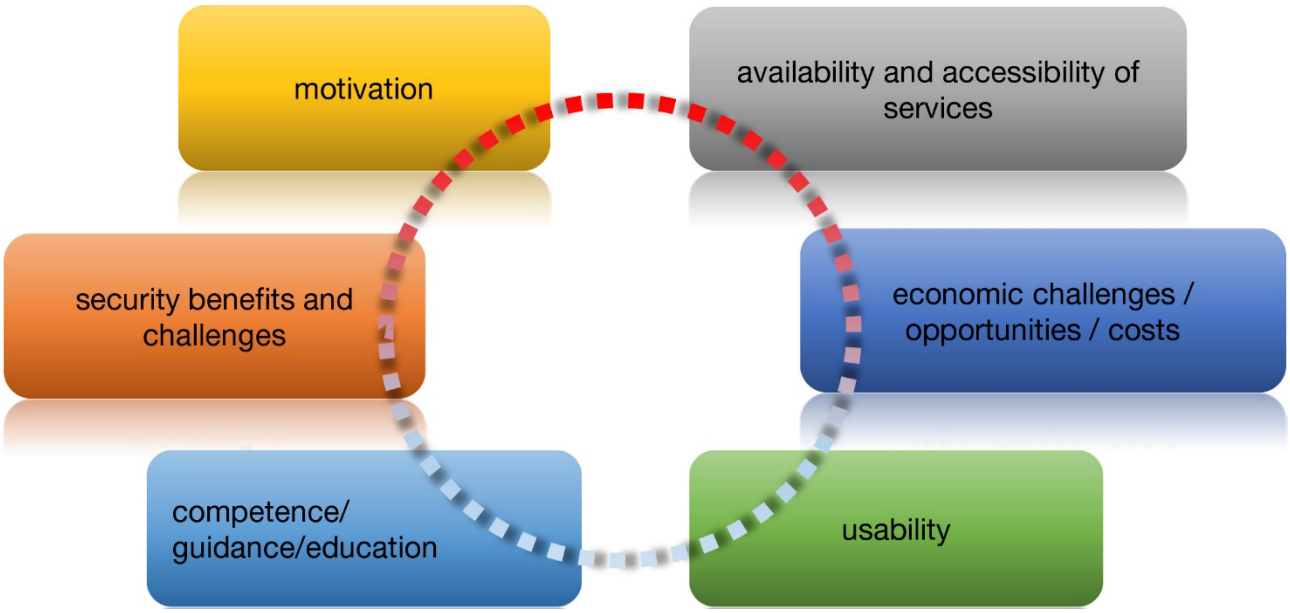
	n	*%*
strongly disagree	0	0
disagree	0	0
neutral	2	4
agree	30	59
strongly agree	19	37
Total	51	100

None of the respondents stated that the more effective delivery of ICT and ICT-AT solutions is not needed. Only two did not agree/disagree.



Qualitative data-analysis of comments

The answers of respondents (n=51) were grouped in five categories presented in the figure.



Motivation

It is not the technology in itself that should be presented, but what you can do with it and how it can help you to meet your life goals.

attitude/fear

- *I wish there was no technology abandonment due to the lack of knowledge of the carers/family of PwD/elderly.*

the actual self-perceived need/ everyday survival

- *desire to use technology*

Economic challenges; the availability and cost of equipment vary in different countries

- *AT/ICT must be available for all users (phwd/the elderly)*
- *In the future, the major group deprived from ICT/ICT-AT will be the poor.*
- *Cost is a relative term - even if ICT/ICT-AT may cost "a lot" - it may cost a lot more to not have technology (e.g. staff to help with everything). However, technology cannot replace the sociality of a human being present in the room. Technology for functional accessibility, but humans for socialisation (not robots or cameras)*
- *Cost issues must include also training and maintenance. Currently, when thinking on costs, the society just think in material cost: a Smartphone can be affordable, but to train users, their families, caregivers, and other social agents is costly! (Both in terms of time and money)*
- *The technology is not expensive, it is always a profitable investment.*
- *Tablets are affordable and usable by many, the costs not necessarily a factor.*
- *Value rationales should weigh more than instrumental rationales, as the latter is often short sighted and usually end up at a higher cost anyway*
- *In the future, the high costs may be a showstopper.*

Security benefits and challenges

- *The more people will depend on technology, the more safety/security will become major issues.*

- *Wellbeing (and the feeling of wellbeing) should be more strived for than purely health/safety.*

Competence / guidance/education

- *supporters who know little about AT or ICT either. It is literally the blind leading the blind.*
- *unfortunately ICT is not part of the primary courses in schools in my country*
- *teacher training*
- *Support over time should be given to people that wish, as technology develops. People should be empowered to keep pace with developments.*
- *Mainstream engineers and designers need to learn about enhanced usability and accessibility.*
- *Most designers do not know the users, and others are only easy money driven.*
- *timing: AT tends to be prescribed at times of stress, so expecting people to be able to assimilate information when they are ill or stressed is impossible.*
- *Peer support models need to be strengthened. for users to be able to use and also be confident to use a certain device, there must be a very strong support system, not only coming from the experts (AT specialists,etc) but also from their families, therapists, teachers, and other staff members that live and work in their familiar environments*
- *Independent AT Centre and their network should be involved in development of ICT products and guidelines on it > Independent selection and guidance*
- *Clear and user friendly language that does not assume any level of previous knowledge*
- *The development of ICT is so rapid that even younger people have difficulties with it. All people should have a possibility to participate in education which is specially designed for their age group (or for PwD).*
- *Actually there are too few people trained to teach PwD how to use ICT AT; in most case PwD have to train themselves using ICT*
- *ICT/ICT-AT should be mandatory at teacher education*
- *Even if PWD or older people are very heterogeneous, a good teacher or trainer should be able to create and adapt a teaching plan to meet needs.*
- *Co-operation between the different players!*

Usability

- *design for all*
- *user- centred development: involved in the development of the systems and devices from the beginning*
- *wish for the future: That we do not need to analyze the usability, it just natural to use the products/services.*
- *A personal user profile stored in a database, accessible with a fingerprint, to automatically adapt all ICT/ICT-AT to me*

Accessibility and availability of services

- *Statutory access to accessible technology by public services & provision of same in public buildings.*
- *Far too few elders and PwDs use the accessibility features they already own. Few have access to any technological help that understands user needs in terms of mainstream products and services*
- *AT/ICT must be available for all users (PwD/the elderly)*
- *eServices can't be the only option, there has to be optional services also (face-to-face, phone service, etc.).*

- *public services too rapidly as ICT-based without support services for people that not prepared to the change*