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PROJECT Nº: AAL-2010-3- 014

D23 – USER ACCEPTANCE TEST

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1. Introduction

This document covers the whole end user participation in the testing of the pilot application, according to work package WP5 User Acceptance Tests and Validation this task includes the specific definition of the target groups and the acceptability test. The results of the three different tests developed for the Deliverable D23 are included covering design, usability and mobility tests from the 3 countries involved in the project.

Due to the large content of the reports and questionnaires from each country it was decided to facilitate the development and conclusions of each one independently, and to present them together in this deliverable. Each questionnaire is available in the annexes.

The final conclusions are summarized together in this deliverable to facilitate the reading and understanding of the results.

2. Objective

The WayFiS application is designed for a specific target group that are Seniors, due to that, the main objective to cover in this deliverable is to evaluate the feedback from these users when using the application, both web and mobile in a real environment to evaluate the improvements that can be developed in case they are needed.

To achieve this, several studies were conducted with senior's volunteers in different countries to obtain conclusions and feedback regarding the application and improve it for its future market launch.

This report is focused on the opinions and comments of the end users regarding WayFiS application. For details on the prototypes developed along the project and improvements made after the first phase of feedback, please refer to version 2 of th D18 pre planning Route service and D19 Planning Mobile Route service deliverables. Regarding the future service improvements that are foreseen for the period after project completion, please refer to the D24 – Future improvements report.

3. Pilots

As it was explained in deliverable D21, in order to include all the features in the feedback, it was decided to implement different kinds of questionnaires, each one focused on specific features. First one was deployed based on the design of the application, second one for testing its usability (one of the main facts in an application devoted to elderly people) and the last one to test the application in a real travelling environment (mobility questionnaire).

In order to be able to improve as much as possible the application, it was decided to perform two phases of the final trials allowing an incremental prototype development, both of them included the different types of questionnaires. In the first phase the seniors made the trials for the first time and answered to the questionnaires, those answers were evaluated by the researchers and provide the first feedback. On the basis on the first results,, several improvements were implemented in the applications generating the second version of the final prototype ready for the final test, in which the end users did the same questionnaires again, but with the application improved. The

results of this second test will be the basis for the development of the final product after the project phase, and they were also the foundations for the D24.

In Spain the design test were developed in Cetiex facilities in Los Santos de Maimona, where seniors are used go frequently and know the place; they feel comfortable and are confident to explain their opinions.

The Usability and Mobility tests trials were done in Badajoz, with the collaboration of the elderly home care “Puente Real” located in Badajoz, taking into account this entity have active Seniors, that even having some illness, keep on travelling with their relatives or friends.

In Hungary the tests were done in SMIMO and in BZN. And the mobility was held in Tökül and in Budapest.

Although the tests were supposed to be developed only by the seniors belonging to CETIEX and SMIMO end users organizations, in order to have more data on the performance and reliability of the mobile applications and include more contents, two more partners participated in the tests, involving employees of the organizations, so some tests were developed by HIB the coordinator of the project which did 4 more mobility tests in Madrid (Spain) to include the transports features (in fact, in Badajoz (Spain) no public transport data were available), also UniGe participated doing some mobility tests, using the only walking mode to assess the performance of the navigation system. In summary, the schedule of the test was as shown below.

SCHEDULE QUESTIONNAIRES							
Web and app (Planning)	**DESIGN 1 10 test**	**DESIGN 2** Improvements **5 test**	**USABILITY 1 5-6 test**	**USABILITY 2** Improvements **5-6 test**	**TRAVEL 1 50 test**	**TRAVEL 2** Improvements **25 test**	**TOTAL**
Spain (Cetiex)	10 Tests	8 Tests	10 Tests	6 Tests	50 Tests	16 Tests	100 Tests
Hungary (SMIMO)	10 Tests	7 Tests	6 Tests	6 Tests	46 Tests	25 Tests	100 Tests
Spain (HIB)						4 Tests	4 Tests
Switzerland (UniGE)						6 Tests	6 Tests
							210 Tests

Table 1 Final Schedule of WayFiS Tests

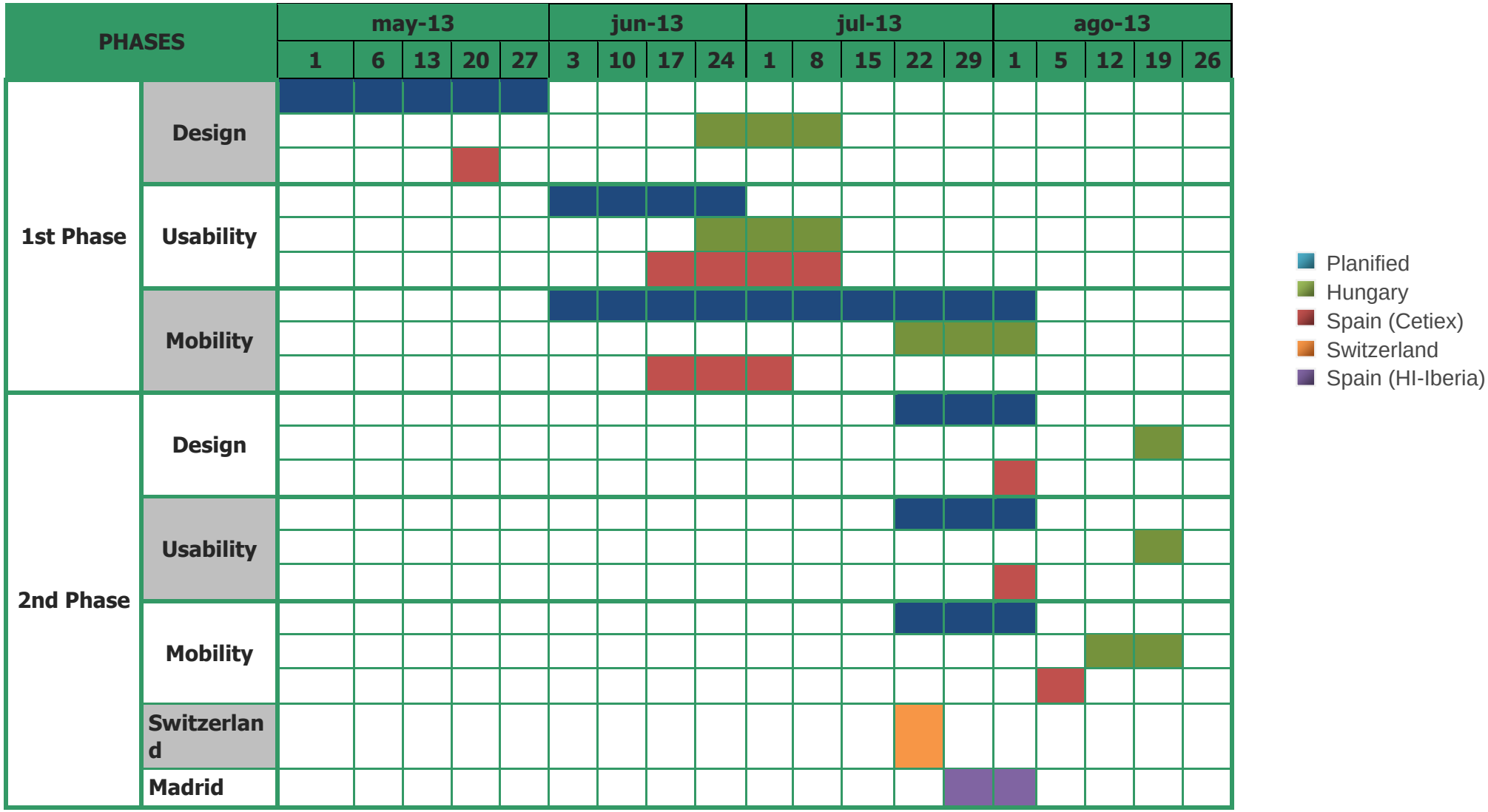

Table 2 Gantt of WayFiS Tests

The table 1 showed the difference between the planned test and the ones really performed, it is a small difference due to the availability of the end users.

The table 2 showed the planning data for the tests and the real timing, the delays were considered, as it wasn't sure that the second prototype with the improvements was going to be ready by the time programmed.

In total 210 tests with end users were developed in a real environment in order to obtain the feedback and opinions about the application.

The results of these questionnaires will be displayed below.

4. Annexes

Annex A. 1st Phase Spain Results

Design Tests

Usability Tests

Mobility Tests

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PROJECT Nº: AAL-2010-3- 014

Design Test Results (1st Phase) Spain

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1. Design Questionnaire Test

2. Spain Results

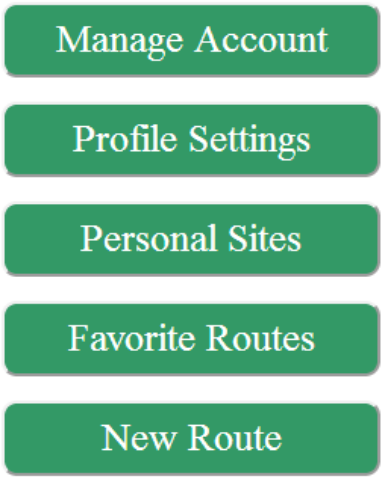
The design test was developed in Cetiex in Los Santos de Maimona the 23rd of May 2013 in the morning for 3 seniors for testing the PC application, and in the afternoon 7 seniors for testing the mobile application. It was developed as a focus group.

2.1. Pc Test

In order it would be possible to obtain results, we made an appointment with 5 seniors, to be able to obtain more conclusions, 3 seniors done the questionnaires and two of them were not capable to keep on with the test, as they didn't have much idea about PC's. The design tests were done by 3 men between 65-75 years old.

Image 1- WayFiS PC test (Spain)

Image 2- WayFiS PC test (Spain)



Examples:

To make them understand the test it was showed the blocks of WayFiS:

Example of blocks:

Those are the **blocks** defined in the application.

Image 3- Example of blocks

Example of points:

Those are the **points** defined in the application.

Image 4- Example of points

Image 5- Example of information given

Example of Information given:

The **information given** is like that, list of favorite routes, where they have to write themselves the name, the start point and the end point.

PC TEST

General	Clearly identify each point	33%
	All points are needed	100%
	The blocks are well defined	60%
	It displays all the necessary information	60%
	TOTAL	**63%**
Identity and information	Information is organized	47%
	You understand the information on the page	53%
	TOTAL	**50%**
Labeled	The images/icons are descriptive	53%
	Fails to distinguish clickable areas from others not	47%
	The site is balanced, it is not overloaded	67%
	Pages titles are correct	33%
	The button tooltips are useful to understand their function	67%
	The position of the buttons is consistent with its function	53%
	The purpose of the buttons is clear	67%
	TOTAL	**48%**
	The organizational structure and navigation is adequate	80%
	Links are easily recognizable	73%
	The structured navigation allows to entering properly	53%
	There are navigation elements to guide the user about where and how to undo their navigation	60%
	It is easy to organize a trip	60%
	It is easy to modify a trip	67%
	It is clear how the system shows the route	53%
	The purpose of the intermediate points is clear	33%
	It is useful to be able to select recently used items when clicking on the address fields	33%

Structure and navigation	It is useful to have favorite routes	93%
	The relationship between the personal settings on the web and its implications for route planning is clear and useful	67%
	The auto complete feature is useful	73%
	The management of saved items (routes, points) is accessible and easy to handle	67%
	View a route recently planned is simple	67%
	Navigation between tabs (routes) is simple	53%
	Navigate around the map is easy	53%
	The purpose of saving a point or route is clear	60%
	TOTAL	**65%**
Appearance	It is avoided overload information	53%
	There are areas in White between objects to rest for the eyes	73%
	Colors are suited to WayFiS image	87%
	There are clearly visual hierarchies established	80%
	Length page is enough	67%
	Width page is enough	67%
	TOTAL	**71%**
Accessibility	The font size is large enough to view it.	47%
	The font type, typographic effects, alignment, line width and employees make reading easily	80%
	There is a high contrast between the font color and background	80%
	Web site is compatible with different browsers	33%
	You can print the page without problems	33%
	The download time is right	60%
	TOTAL	**50%**

Table3-WayFiS Results PC Design Questionnaire

2.1.1. General

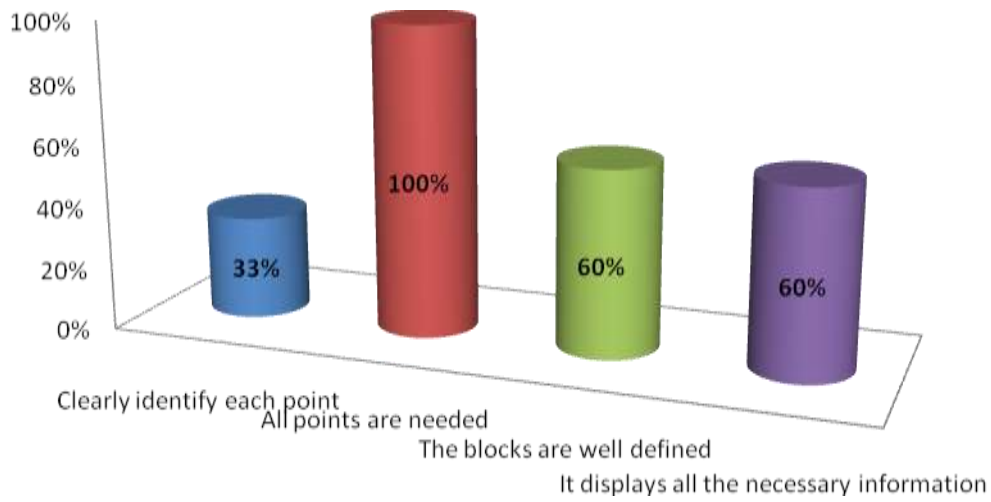


Figure 1-General PC

By the answers given we could affirm that it's not easy to indentify each point,, they have problems with the titles and names of the blocks and points in the beginning. When it is explained by the researcher what each one means, then they all agree they are important although they would like to have another names.

- The app by default appears in English, you have to change language first on the flags to be able to understand it. If you do not realize before registration, when you enter in the application, it's all in English.
- To be registered is not properly showed,as when you open the application on the PC you have to move the vertical bar to see that it is on the bottom.

2.1.2. Identity and information

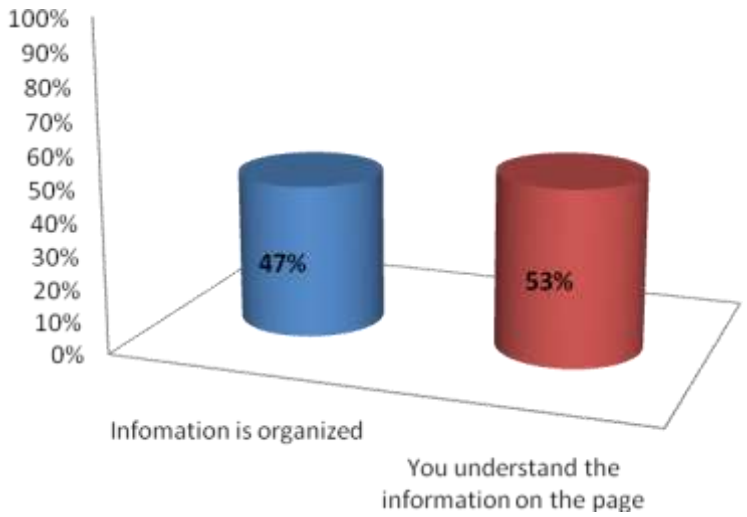


Figure 2-Identity and Information PC

From the results obtained it is concluded that a 47% find the information organized, which means it's not as clear as needed, the 53% said they understood the information given, it's not clear, they asked what was each title for, as they had doubts on what expect from each one.

2.1.3. Labeled

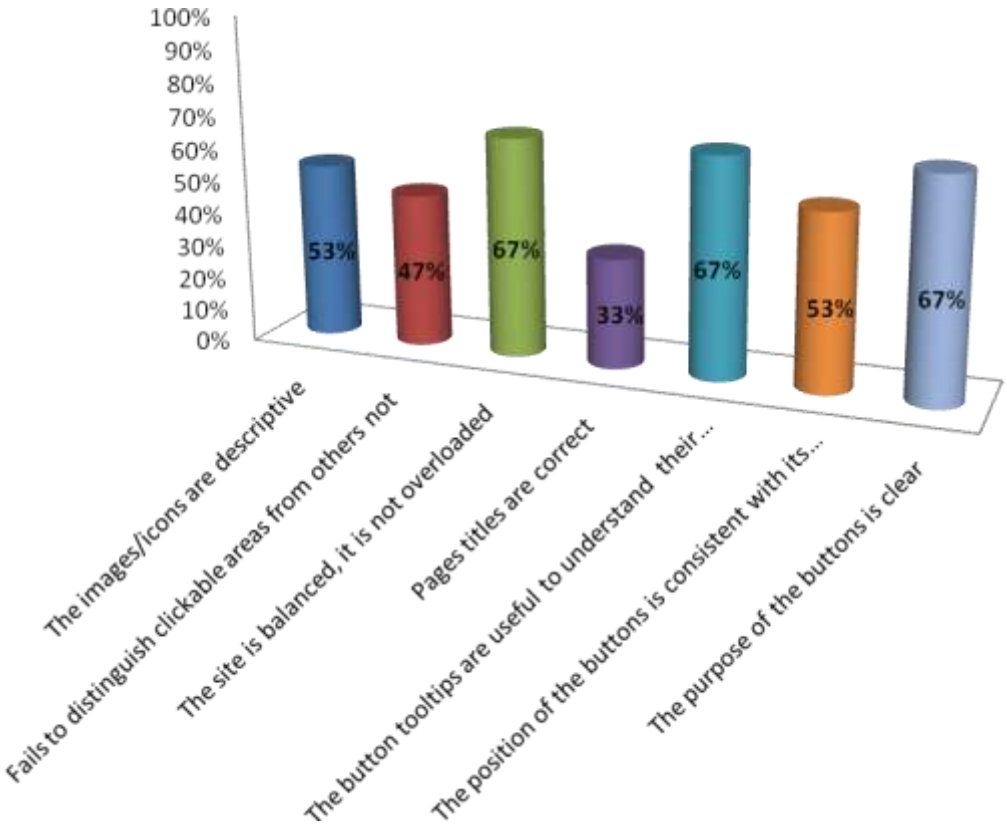


Figure 3- Labeled PC

From the answers given we could see Seniors don't recognized properly the images and buttons, from the values it could be obtained that regarding the balance of the site, the button tooltips and the purpose of the buttons they understand what to do, on the other side they insist on page titles which make them confuse about the meanings, their comments given were:

- It should be an explication of each title in order they know what they have to do in each one.
- They do not understand the difference between favorite routes and personal sites.
- Managing account was understood as if they could make some bank movements in their bank account.

- They do not understand how to select a favorite route and a personal site.
- When you try to select a route the button on the right says "save" that's not clear for them, it was needed to explain what was that for.

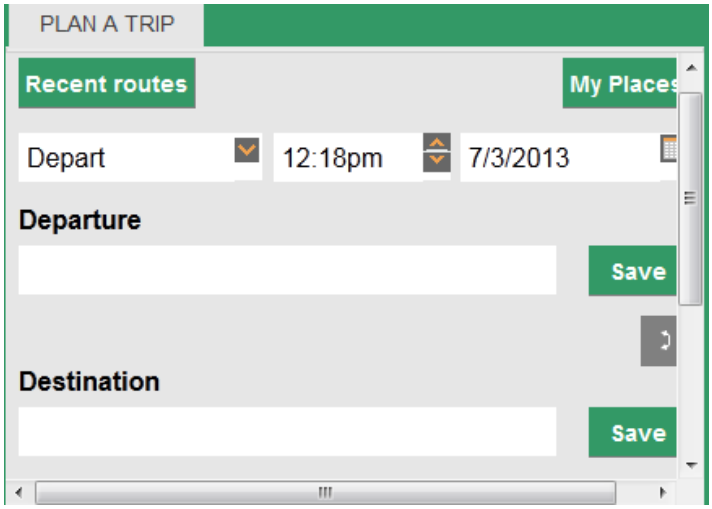


Image 6- Example of save PC

2.1.4. Structure and Navigation

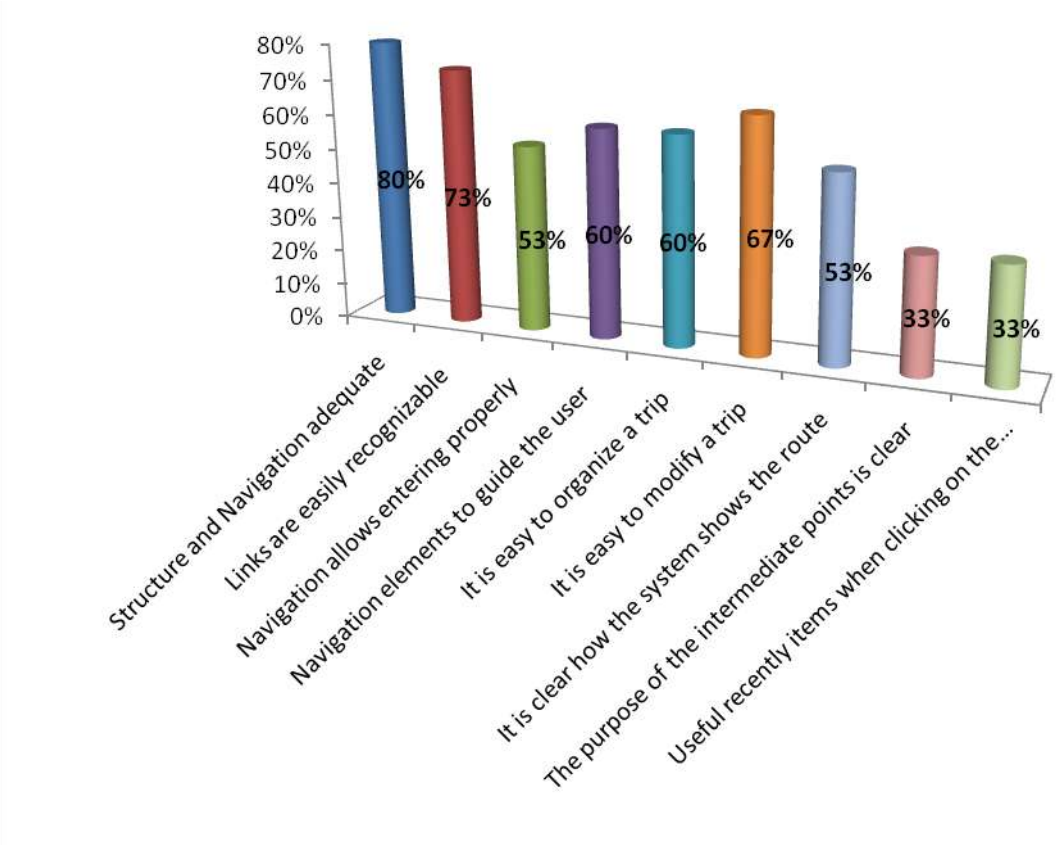


Figure 4-Structure and Navigation 1 PC

An 80% of the Seniors found the structure and navigation adequate, nearly a 75% think links are easily recognizable, although the 53% said navigation allows entering properly, organize and modify a trip find a 65% of them easy, but just a 33% said intermediate points are clear and recently items are useful, as they do not appear clearly. As there weren't too much intermediate points, they understood them as if it was just making a detour.

- Apparently a 67% find it easy to modify a trip, but as they were doing it, it wasn't that way, they couldn't notice that it was the first one selected still on it, so they said that if they do not have the first one selection, they couldn't compare the routes to know which one fits better, they didn't realized the first trip was in the left side.

Image 7- Example of modify a trip

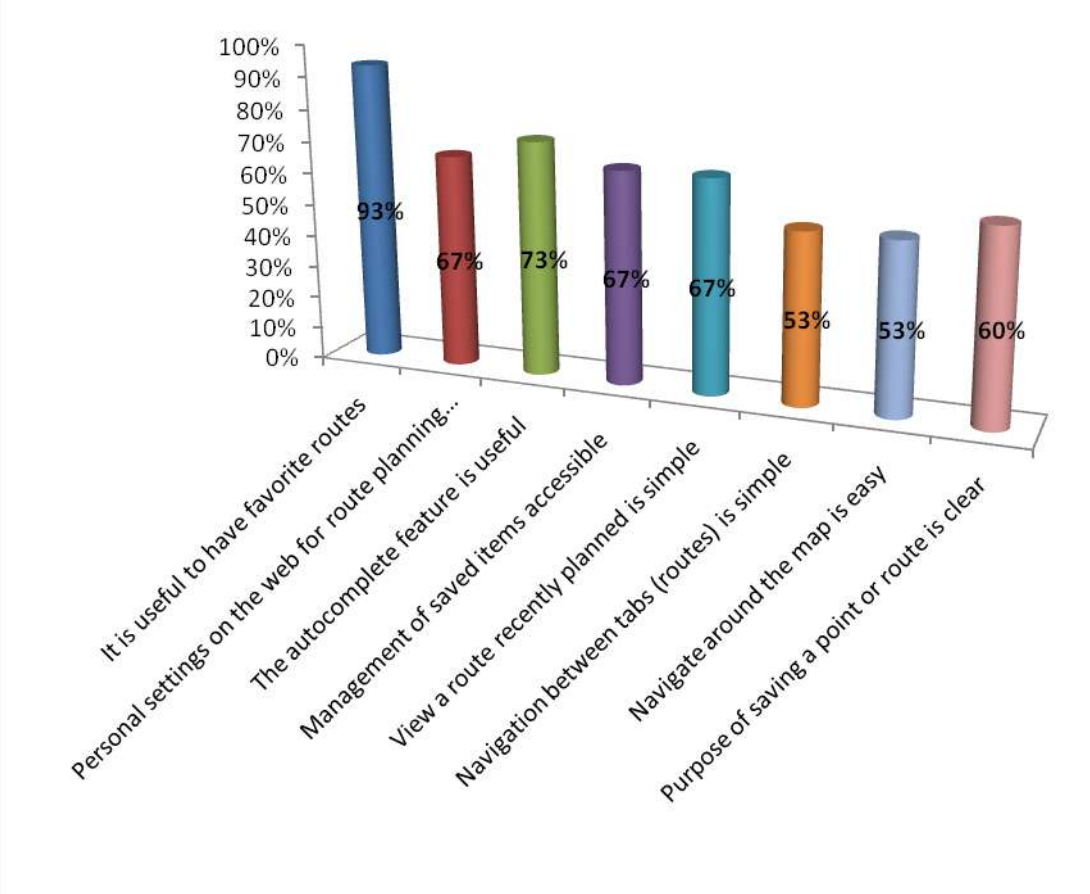


Figure 5- Structure and Navigation 2 PC

Nearly a 100% think having favorite routes could be useful, and just a 67% find the relationship between the personal settings on the web and its implications for route planning is clear and useful, the auto complete feature is for the 73% useful and a 67% think management of saved items and view a recently route is simple.

- They find good the auto complete route, once they understood what it was, it would be need another explication or definition in order they know what it is.
- As they are tipping the name of the street/direction they want to search, there start to appear similar names, which make them be confuse, because they write without looking at the screen, they tipe 5 letters and then look at, and suddenly there are few options, they don't know were they came from, if they have tipped something wrong or not.

Image 8- Example of tipping a route

2.1.5. Appearance

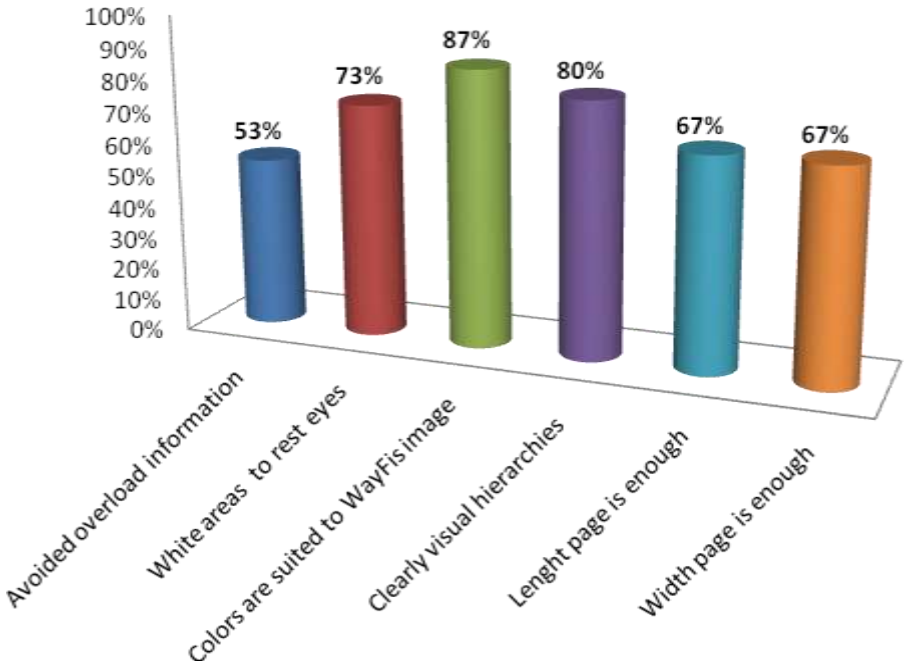


Figure 6- Appearance PC

In general they said the appearance was good, the 87% agreed with the colors, and the 80% said it was clearly the hierarchies established, they found the white areas useful and comfortable a 73% thought that, and regarding the length and width of the page it was a 67%, there was just a 53% that overload information, as they thought although it was enough, as they didn't understood it properly, it was difficult to know ifit was too much or not information.

2.1.6. Accessibility

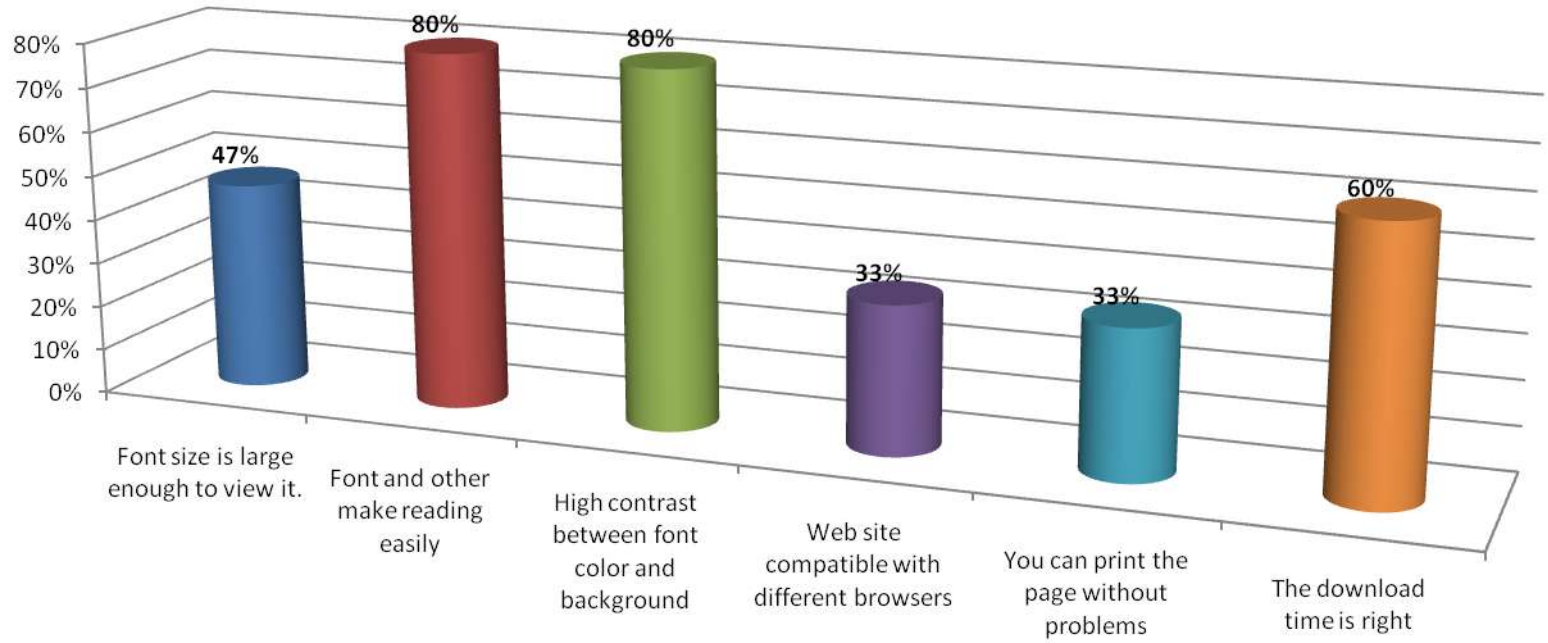


Figure 7- Accessibility PC

- Once you have registered, you have to open your email account to access, and it's not a click on the link, you have to copy the link into the browser which is not easy for them.
- You copy the link and it opens WayFiS application, again in English, you have to change the language again.
- When you enter you receive a mail showing you your user name and your password, in English.
- In chrome: "Profile settings" and "Disconnect" it's not properly showed.

2.2. Mobile Test

This test was conducted by 7 seniors, 4 men and 3 women, with a range of ages from 67-78, three of the men had themselves smart phones, which were:

- Samsung Galaxy Mini
- Samsung Ace
- Montecarlo

The other four mobiles were given by Cetiex, and were Samsung Galaxy SII.

Just one of them had never tried internet on a mobile the other 6 had some idea on how it worked, although just for few things.

Image 9- WayFiS Mobile test (Spain)

MOBILE TEST

General	Clearly identify each point	74%
	All points are needed	86%
	The blocks are well defined	63%
	It displays all the necessary information	74%
	TOTAL	**74%**
Identity and information	Information is organized	66%
	You understand the information on the page	71%
	TOTAL	**69%**
Labeled	The images/icons are descriptive	83%
	Fails to distinguish clickable areas from others not	63%
	The site is balanced, it is not overloaded	77%
	Pages titles are correct	57%
	The button tooltips are useful to understand their function	89%
	The position of the buttons is consistent with its function	83%
	The purpose of the buttons is clear	83%
	TOTAL	**76%**
	The organizational structure and navigation is adequate	40%
	Links are easily recognizable	54%
	The structured navigation allows to entering properly	66%
	There are navigation elements to guide the user about where and how to undo their navigation	57%
	It is easy to organize a trip	69%
	It is easy to modify a trip	80%
	It is clear how the system shows the route	69%
	The purpose of the intermediate points is clear	69%
	It is useful to be able to select recently used items when clicking on the address fields	63%
	It is useful to have favorite routes	89%

Structure and navigation	The relationship between the personal settings on the web and its implications for route planning is clear and useful	80%
	The auto complete feature is useful	54%
	The management of saved items (routes, points) is accessible and easy to handle	69%
	View a route recently planned is simple	60%
	Navigation between tabs (routes) is simple	86%
	Navigate around the map is easy	60%
	The purpose of saving a point or route is clear	86%
	TOTAL	**68%**
Appearance	It is avoided overload information	20%
	There are areas in White between objects to rest for the eyes	57%
	Colors are suited to WayFiS image	77%
	There are clearly visual hierarchies established	34%
	Length page is enough	51%
	Width page is enough	51%
	TOTAL	**49%**
Accessibility	The font size is large enough to view it.	63%
	The font type, typographic effects, alignment, line width and employees make reading easily	63%
	There is a high contrast between the font color and background	83%
	Web site is compatible with different browsers	66%
	You can print the page without problems	34%
	The download time is right	66%
	TOTAL	**62%**

Table 4-WayFiS Results Mobile Design Questionnaire

2.2.1. General Mobile

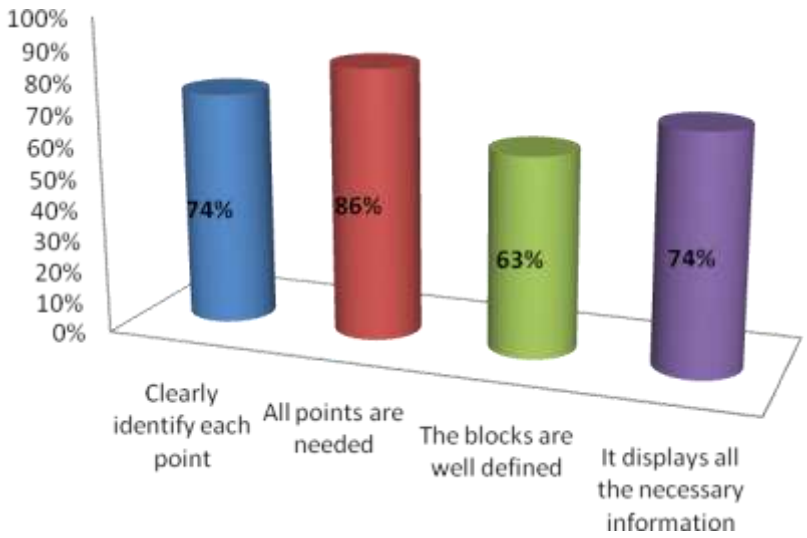


Figure 8- General Mobile

In the mobile test, when the app opens, buttons are showed, more clearly, that's why a 74% of the Seniors said it was well defined in comparison with the PC results were was just a 33%, and an 86% agreed on, that all points are needed, similar to the PC results a 63% said blocks were well defined and 74% had the necessary information.

- To be registered it's quite difficult for them, as they do not have email, and if they have it's not on the mobile, it would be easier with a sms, they said.

- To write something maybe if it's a legend where it's said, tap here or something it would be clear.

- The application is clear for them when you showed it, and it seems all the items are needed, although the first one, They do not understand what manage account means, they think in bank account.

- They do not understand what POI means, as it's an acronym, and they don't use them much.

2.2.2. Identity and Information Mobil

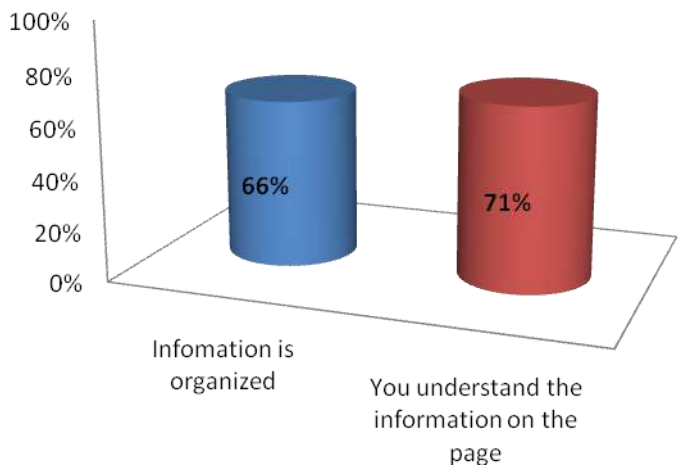


Figure 9-Identity and Information Mobile

More than 65% seniors thought information was organized and 71% understood the information of the page.

They comment some information they would like to have:

- List of Hotels, and options to make reserves
  - *Suggestion: Optional going to the link.*
- There is not too much information regarding cities.
- Telephones number from the POI's
- The app doesn't show touristic POI's

2.2.3. Labeled

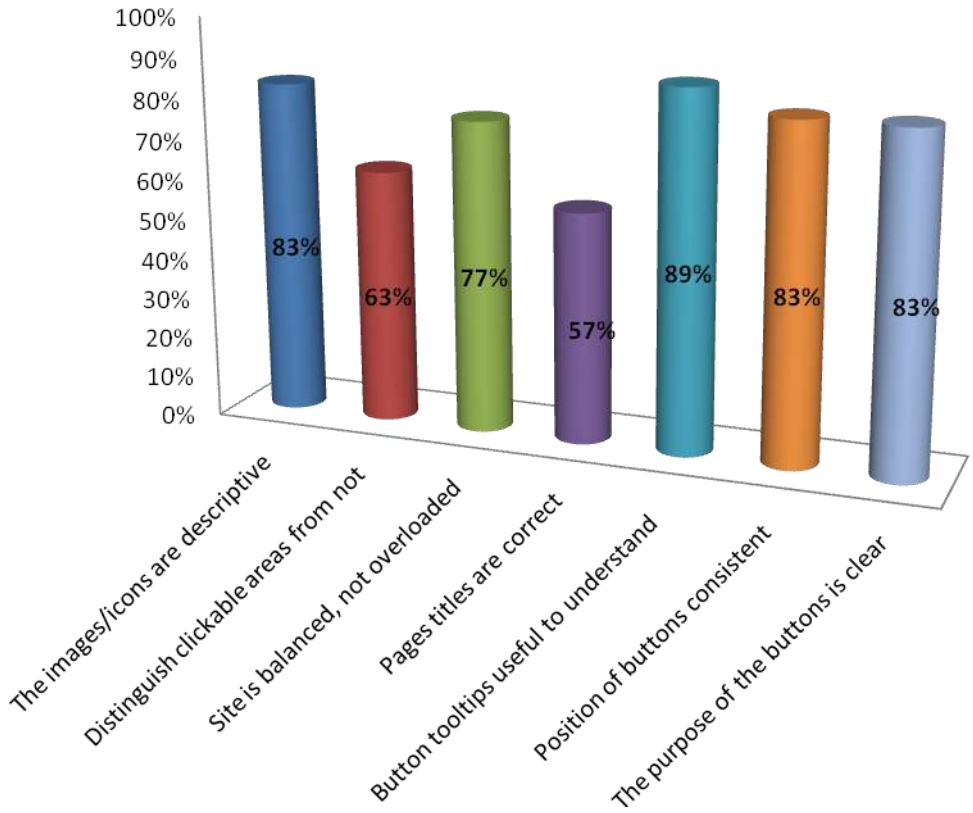


Figure 10-Labeled Mobile

Nearly a 85% said images and icons are descriptive, and the position and purpose of the buttons was clear and consistent with its function and useful to understand, more than a 80%. The 63% agreed that it was distinguish the clickable areas from others that are not, but once they've discovered the first one. The 77% think site it's balanced, and just a 57% said titles were correct, same as in PC application; they misunderstand the meaning of some of them.

Some of the comments they made were:

- They need to have sounds on the buttons.
- Sounds when you introduce some data.
- Sounds to guide us through the app.
    - Suggestion. By adding an option that if you prefer, when you touch a block it sounds, "General Settings" i.e.
- Bigger letters.
- It doesn't allow you to make letters bigger.
- They would like to have some lens to be able to read properly.
- To be able to read street names.

2.2.4. Structure and Navigation Mobile

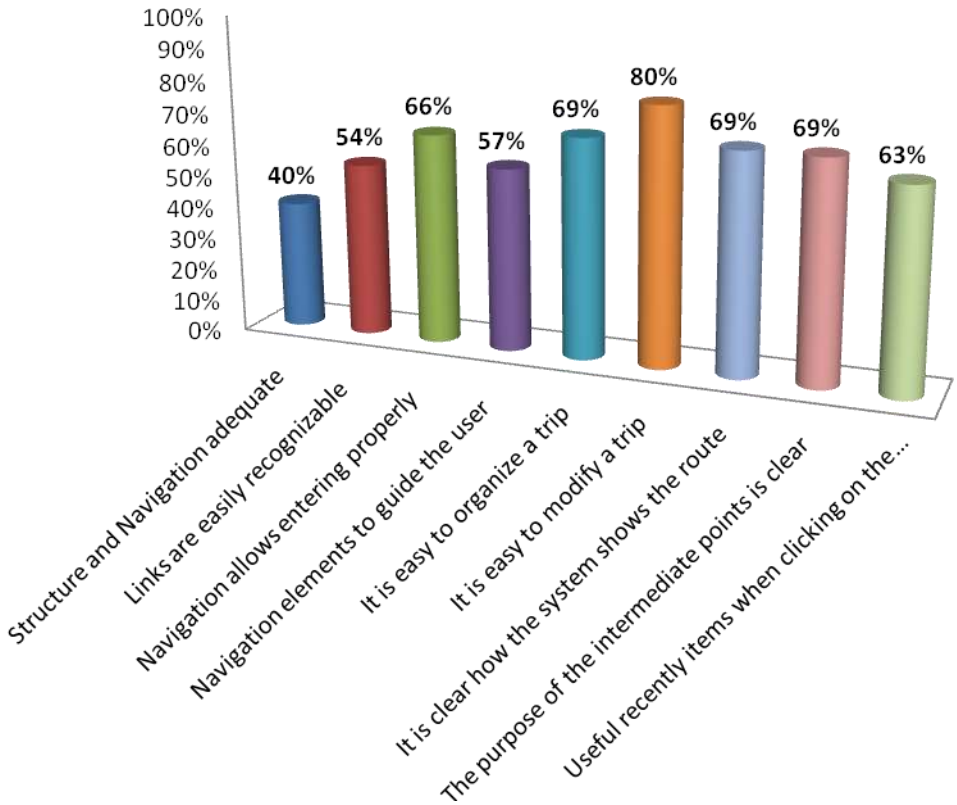


Figure 11- Structure and Navigation Mobile 1

Just a 40% find structure and navigation adequate, as in the mobile application it's not intuitive for them how to go back and on. A 54% said links were easy recognizable, and navigation elements to guide the user were ok. Nearly a 70% find easy to organize a trip and an 80% find it easy to modify. A 69% agreed on how clear the system showed the route and the purpose of the intermediate points. The nearly 65% think recent items are useful.

In the mobile app, while there are choosing they profile settings, they have to tap the Samsung button on the right side, which is confused for them, maybe an option would include a button inside the application to go back to the menu.

Image 10- Example of Samsung buttons

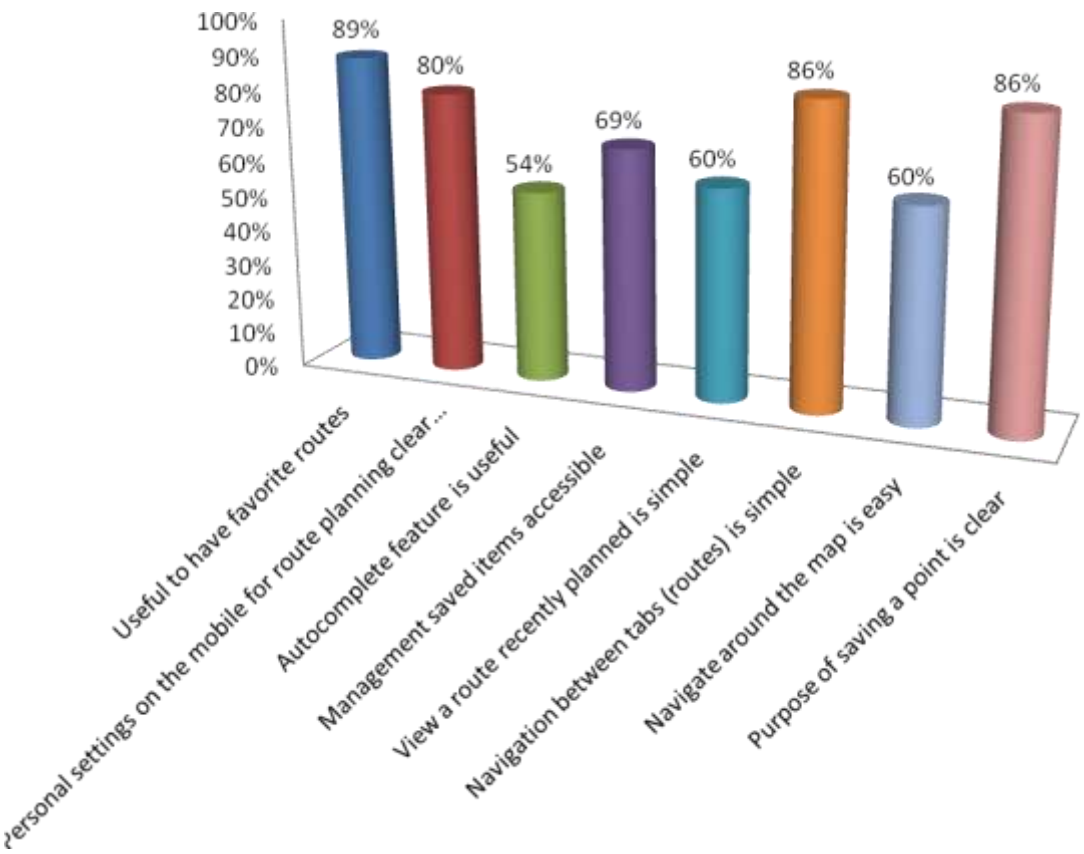


Figure 12-Structure and Navigation Mobile 2

An 89% of the Seniorsthought that its useful to have favorite routes as it wouldn't be necessary to write them again, the 80% also sees the personal settings on the mobile for route planning clear and useful. Just a 54% thinks auto complete feature it's useful, mostly because they do not understand properly what it for is. The 69% agreed on the management saved items it's accessible and a 60% tried to view a recently route and. 86% said navigation between routes was simple, and the purpose of saving a point also.

Just a 60% find the navigation around the map easy, as they couldn't fix properly were they were, and most of them weren't also able to make the map bigger.

2.2.5. Appearance

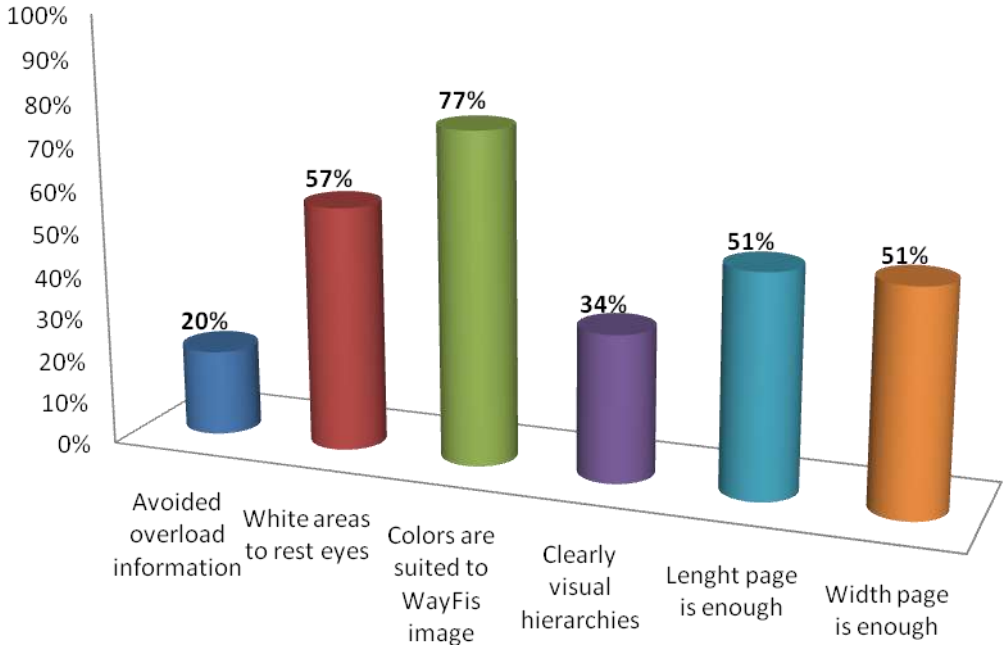


Figure 13-Appearance Mobile

On contraire of the PC application, in the mobile Seniors found it was an overloaded information, as they couldn't understand properly what each part meant. The 57% could rest the eyes, but it wasn't enough they said. Color of WayFiS was ok for them, but they couldn't difference clearly the hierarchies as it's showed by the 34% who only agreed. Regarding the page just a 51% said it was enough length and wide.

- They feel letters and buttons should be bigger and clearly.
- Seniors where looking for an Icon from Hotel, which doesn't appear.
- Police icon it's not clear, they weren't able to define what it was.

2.2.6. Accessibility

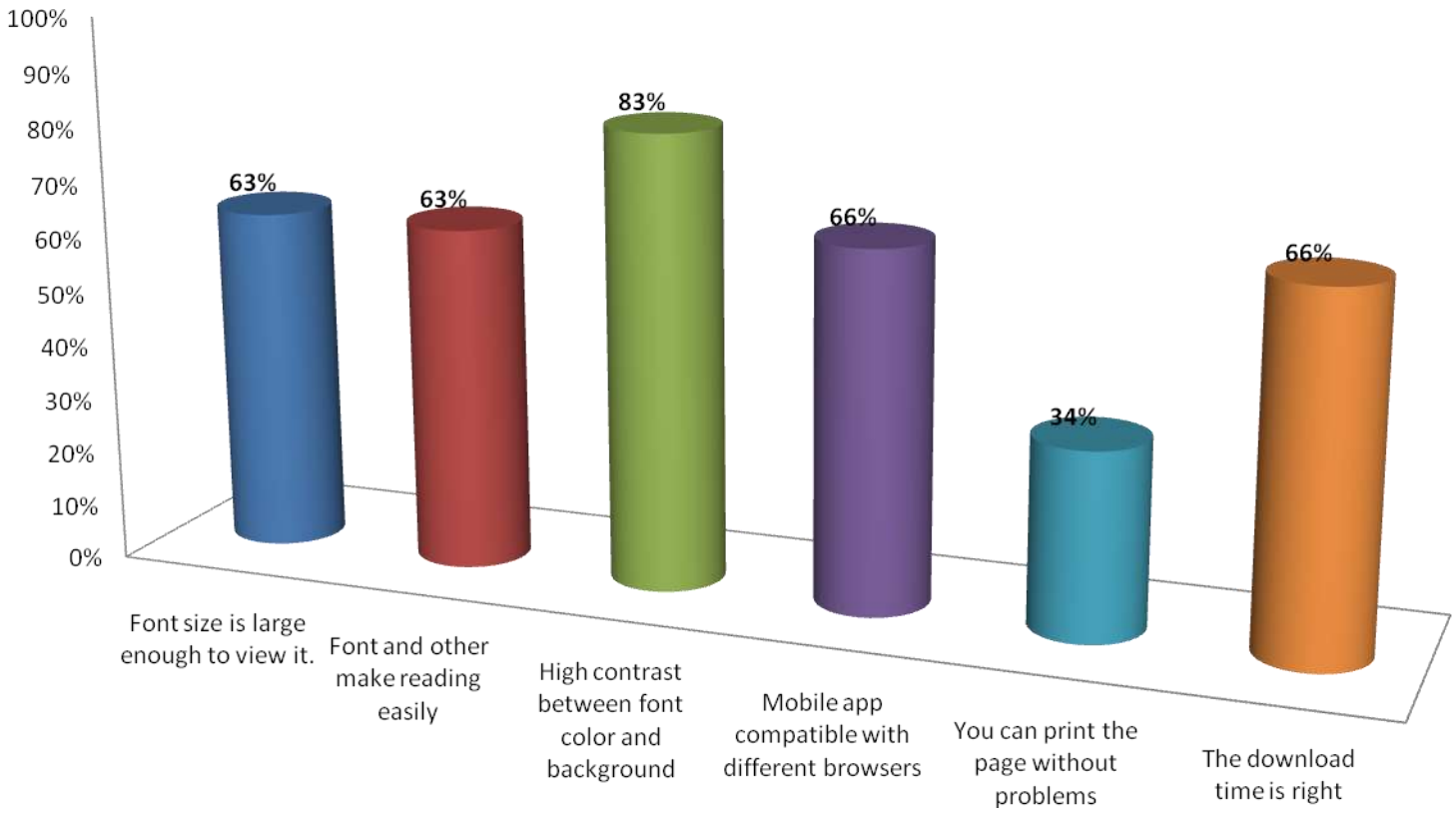


Figure 14-Accessibility Mobile

The 63% said font size and type, typographic effects, alignment, line width and employees make reading easily, it is also a High contrast between color and background, as its seems by the 83% of points. As this test was with android, they didn't have to entering any browser, but as they had to go into the email account, it was regarding it what they answered. About printing there was no choice also. A 66% find the download time ok.

- There is no choice to buy tickets online.
- They need a button that says continue/back, currently, they should do it on the phone, it's not intuitive.

When they are adding information, they have to go forwards or backwards by tipping the mobile, it would be need a button included in the app that says continue, or back.

Currently they have to press here, but they are not able to go by themselves.

Image 11- Example of button suggested

If the mobile has in settings the screen timeout preselected to 15 seconds, then if you don't push any button the screen turns off.

- Suggestion: Removing the screen timeout when WayFiS is displayed.

- It doesn't allow you to rotate the mobile, image stays.

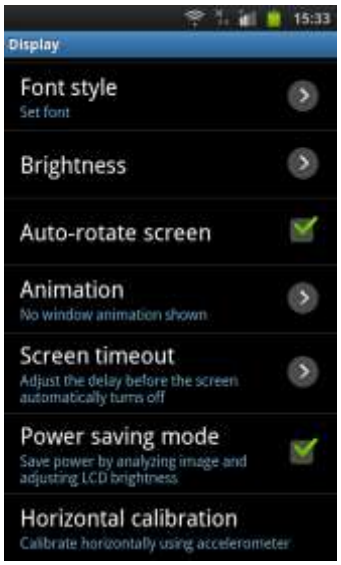


Image 12- Example of screen timeout

2.3. Spain Conclusions

- At the beginning the registration part is complicate for them; they do not feel comfortable doing it, all of them needed help to fulfill the data. To make the registration on the PC was difficult because of the language, they're not used to start a page on English and that was the first annoyance.

- Seniors don't understand properly all the meaning of the points and blocks.

    - Suggestion: For the first time they enter in a block it could appear an icon explaining what it is, and what for, it would appear constantly until they touch, don't show again.

- There are afraid, how not to forget the mobile.

- It doesn't allow you properly to introduce favorite routes.

  When they entered in Favorite routes it's said, no route display, so they've tried to go to new route, but they couldn't see where to choose that selection as Favorite one.

    - Suggestion: If they enter for the first time in the app, when they selected favorite routes or personal sites, it could show an i.e. of how to do it.

- You could not do zoom on the screen, just on the map.

- Fatigue sensation, by default its normal, they don't like it like that.

- Gender: By default its male, they don't like it like that.

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Usability Tests Results (1st Phase) Spain

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Usability tests-Spain Results

1- Mobile tests

The usability tests was developed in Cetiex and Puente Real (elderly home care) in Badajoz between 16th and 18th June on morning by 6 seniors, 2 men and 4 women with age between 63 and 89 years old. It was developed a previous focus group. In order to develop the usability test it was used the WayFiS mobile application V7, and 5 smart phones with android system: 3 Samsung Galaxy SIII mini and 2 Samsung Galaxy SSCL.

Image 1-Usability tests (Spain)

Image 2-Wayfis Usability Tests (Spain)

USABILITY QUESTIONNAIRE	
Date	
Name	
Age	
Gender	☐ Male 33% ☐ Female 67%
Place of residence	☐ Big city (over 500 thousand) ☐ medium sized city (100-500 thousand) 67% ☐ small town (10-100 thousand) ☐ village 33%
Level of education	☐ No education/primary school ☐ Secondary school 50% ☐ College (diploma) 17% ☐ University 33%
Current employment status	☐ Free lancer Employee 17% ☐ Civil servant 17% ☐ Labourer Housewife/-man ☐ Retired 66% ☐ other_____
Computer skills	☐ Very high ☐ Rather high 17% ☐ Rather low 33% ☐ Very low 33% ☐ Non 17%
First steps in the app	Time to switch on ☐ 1-10 seconds 33% ☐ 10- 20 seconds 67% ☐ 20 – 30 seconds ☐ More than 30 seconds

	Registration	
	☐ Easy	
	☐ Rather hard	67%
	☐ Very hard, because	33%
	Signing in	
	☐ Easy	83%
	☐ Rather Hard	17%
	☐ Very hard, because	
Enter a departure, destination	Usability	
	☐ Easy to use	
	☐ rather hard to use	67%
	☐ hard to use, because	33%
	Changing of them(Departure and Destination address)	
	☐ Easy	
	☐ Rather hard to do	67%
	☐ Hard, because	33%
	The way how they appear color on the map is	
	☐ Good	83%
	☐ Good enough	17%
	☐ Could be better, like	
	The way how they appear size on the map is	
	☐ Good	83%
	☐ Good enough	17%
	☐ Could be better, like	

Route	The way how it appear color on the map is	
	☐ Good	100%
	☐ Good enough	
	☐ Could be better, like	
	The way how it appear size the map is	
	☐ Good	33%
	☐ Good enough	50%
	☐ Could be better, like	17%
	If you want to change the route to do it is….?	
	☐ Easy	50%
	☐ Regular	
	☐ Difficult, because.....	50%
	The colors of the arrows showed are…	
	☐ Good	100%
	☐ Good enough	
	☐ Could be better, like	
	The meanings of the arrows showed are…	
	☐ Good	67%
	☐ Good enough	33%
	☐ Could be better, like	
Screen	Images and letters are…	
	☐ Big enough	
	☐ Medium	33%
	☐ Small	67%
	The font type is …….	
	☐ Good	50%

	☐ Good enough	33%
	☐ Could be better, like	17%
	Brightness of the screen is…	
	☐ Enough	17%
	☐ Regular	33%
	☐ Bad	50%
	The information on the sites are	
	☐ Enough	67%
	☐ Regular	33%
	☐ Too much	
POI's	Your profile settings and the POI's showed to you…?	
	☐ Match exactly	67%
	☐ Just a few match	33%
	☐ It doesn't match at all	
	POI's simbology is understable…?	
	☐ Clearly	83%
	☐ Regular	17%
	☐ Not at all	
	POI's Showed along the route are…?	
	☐ Enough	67%
	☐ Too much	
	☐ Few	33%
Suggestions	Please feel free to share your opinion about the route plan	

Table 5-WayFiS Usability tests results (Mobile application)

1.1 Gender

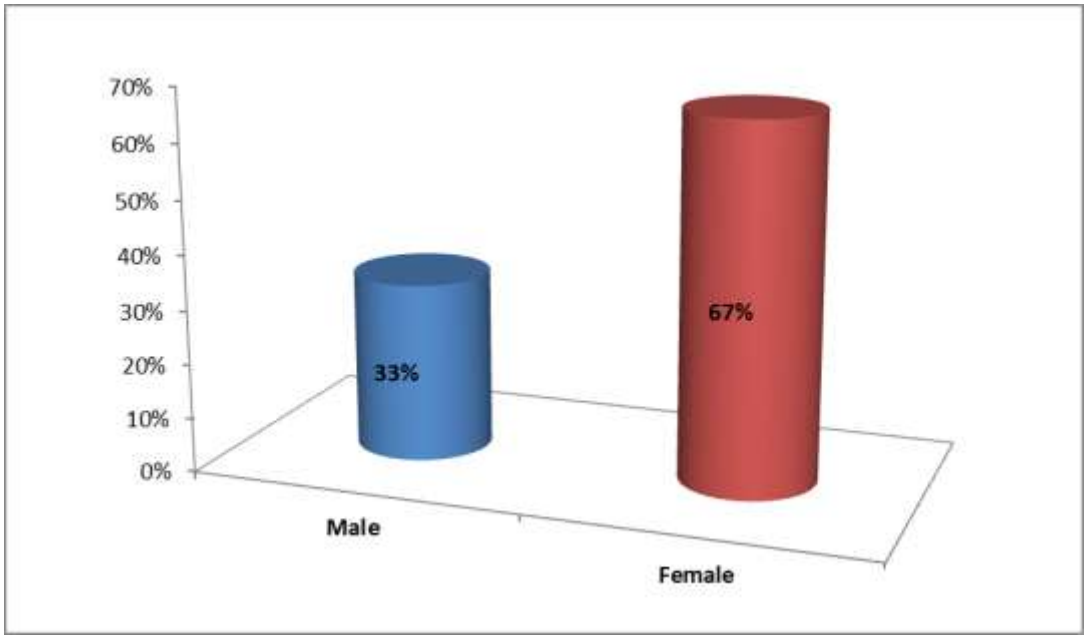

Figure 15-Gender

Concerning the gender of seniors tested 33% were men and 67% were women.

1.2-Place of Residence

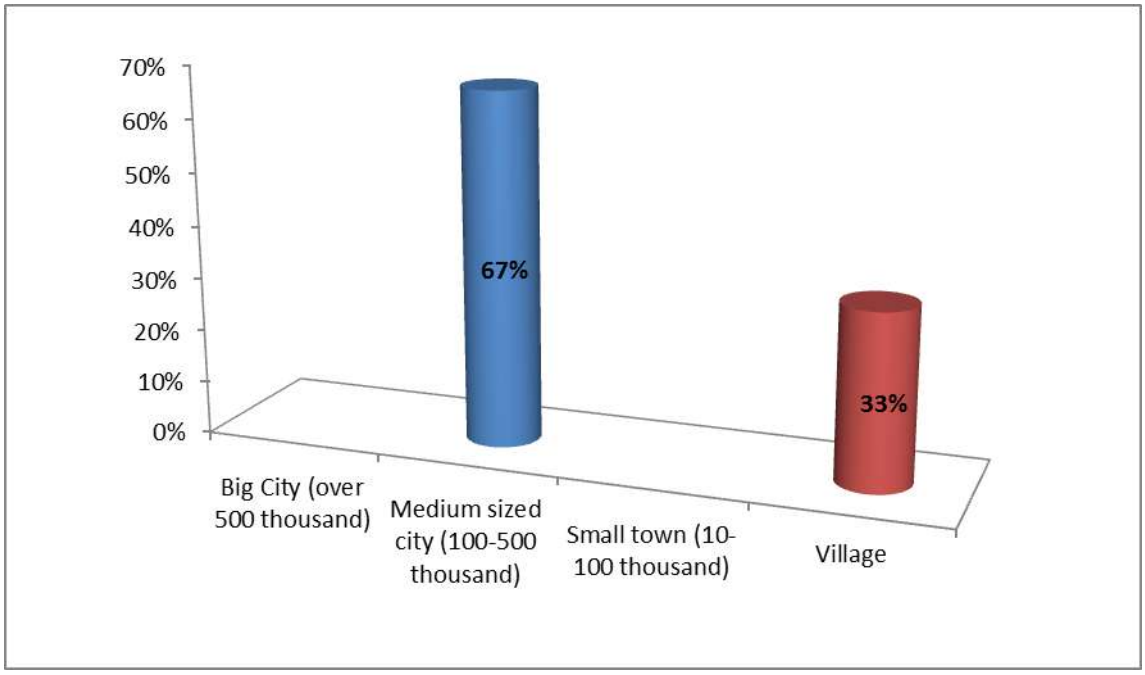

Figure 16-Place of Residence

The most part of seniors tested have their place residence in a medium size city 67% and 33% of them in a village. There weren't tested seniors from big cities or small town.

1.3-Level of Education

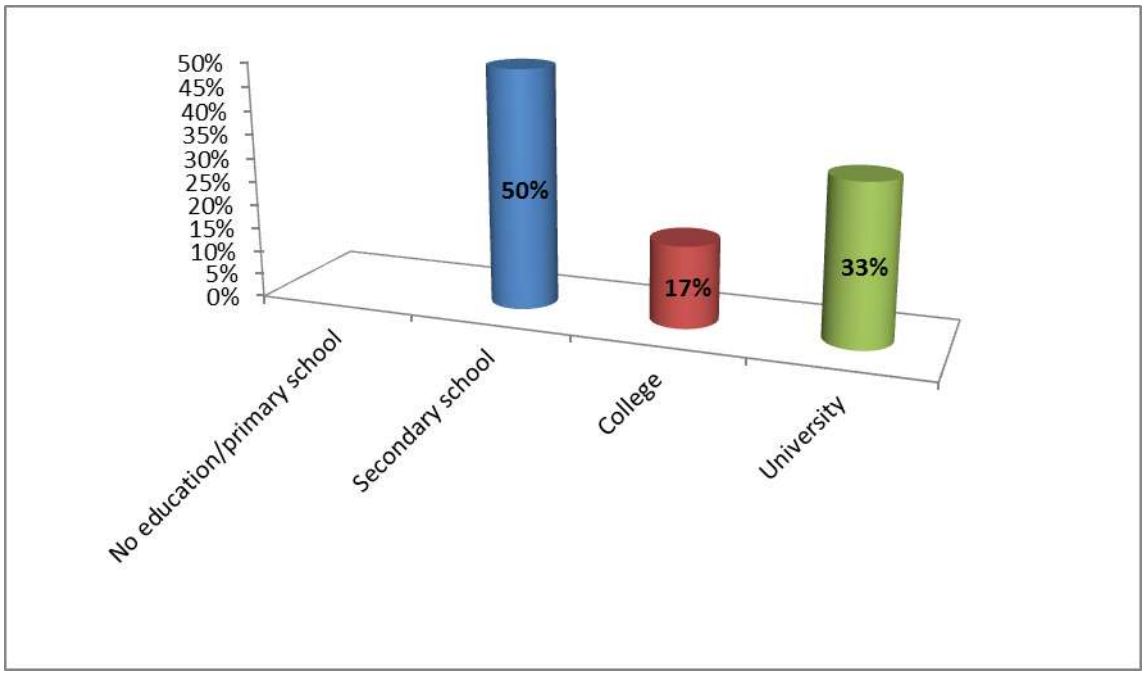

Figure 17-Level of education

About the level of education 50% of seniors have secondary school, 33% have university studies and 17% college degree.

1.4-Current employment status

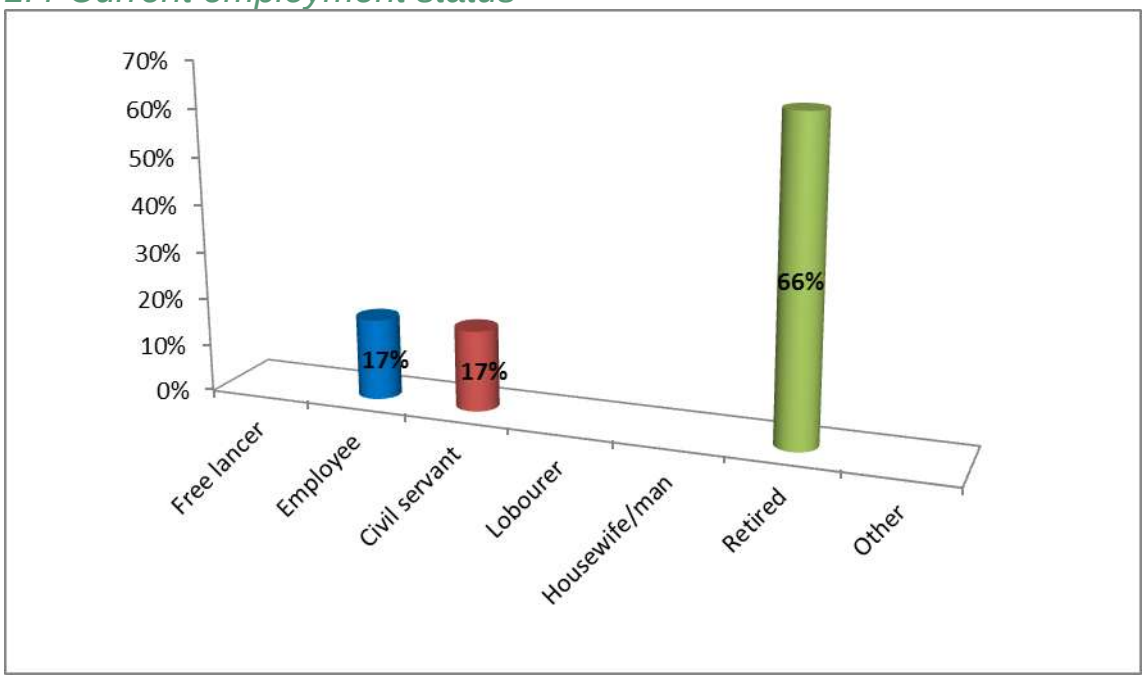

Figure 18-Current employment status

Concerning employment status 66% of seniors tested are retired, 17% employee and other 17% are civil servant.

1.5-Computer skills

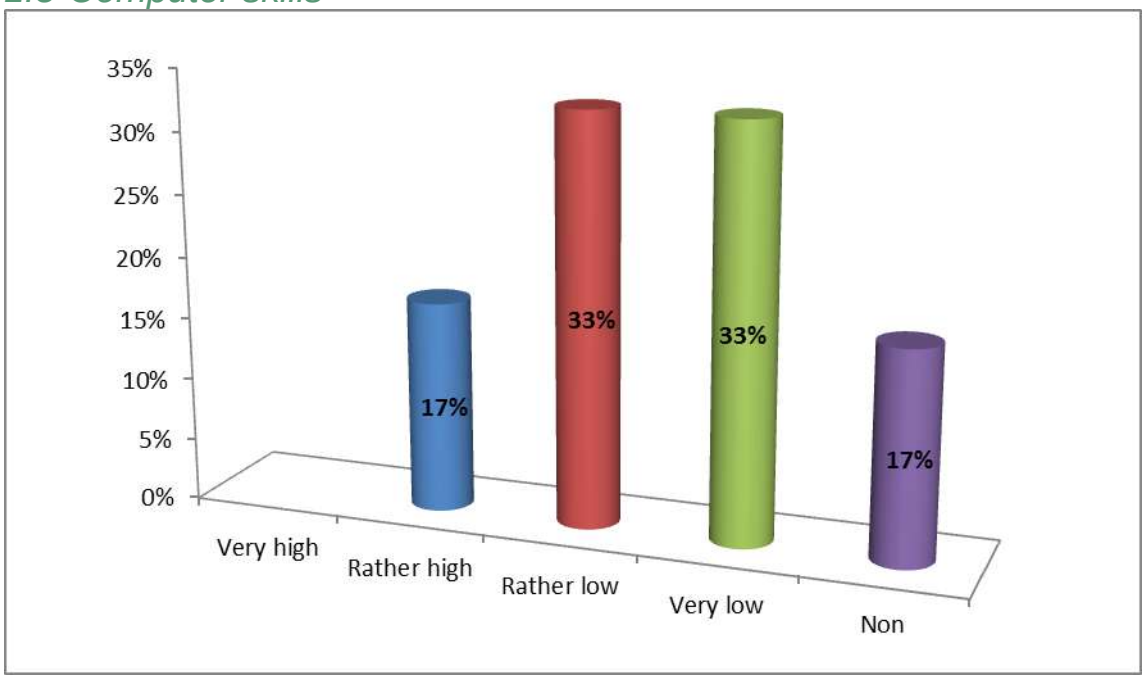

Figure 19-Computer skills

In overall the computer skills of seniors are low, 33% rather low, 33% very low, 17% rather high and 17% don't have computer skills.

1.6-First steps in the app

1.6.1-Time to switch on

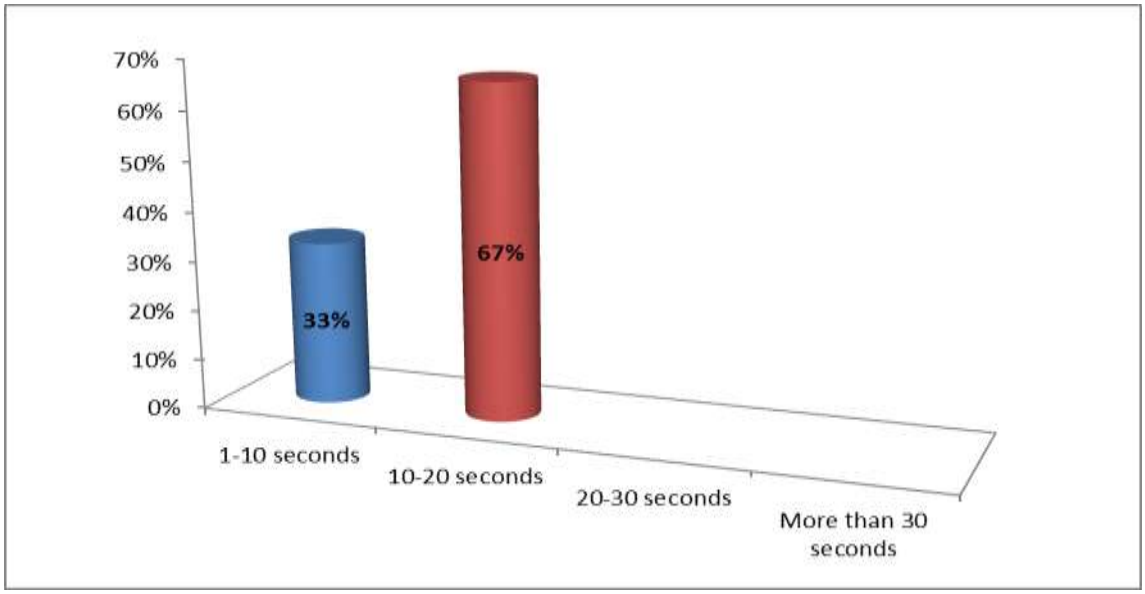

Figure 20-First steps in the app: Time to switch on

The users considered the time to switch the application enough quick, in 33% of cases the duration was 1-10 seconds and 67% was between 10-20 seconds.

1.6.2-Registration

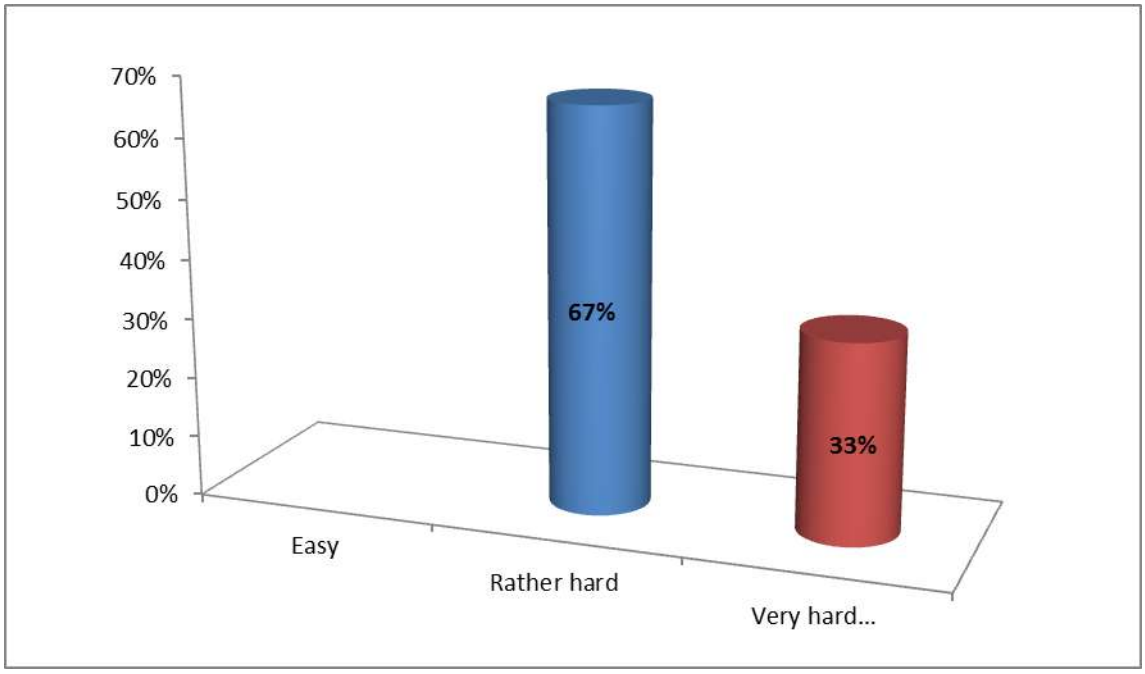

Figure 21-First steps in the app: Registration

The totality of seniors commented it is difficult to do the registration in the application, 67% mentioned rather hard and 33% very hard.

1.6.3-Signing in

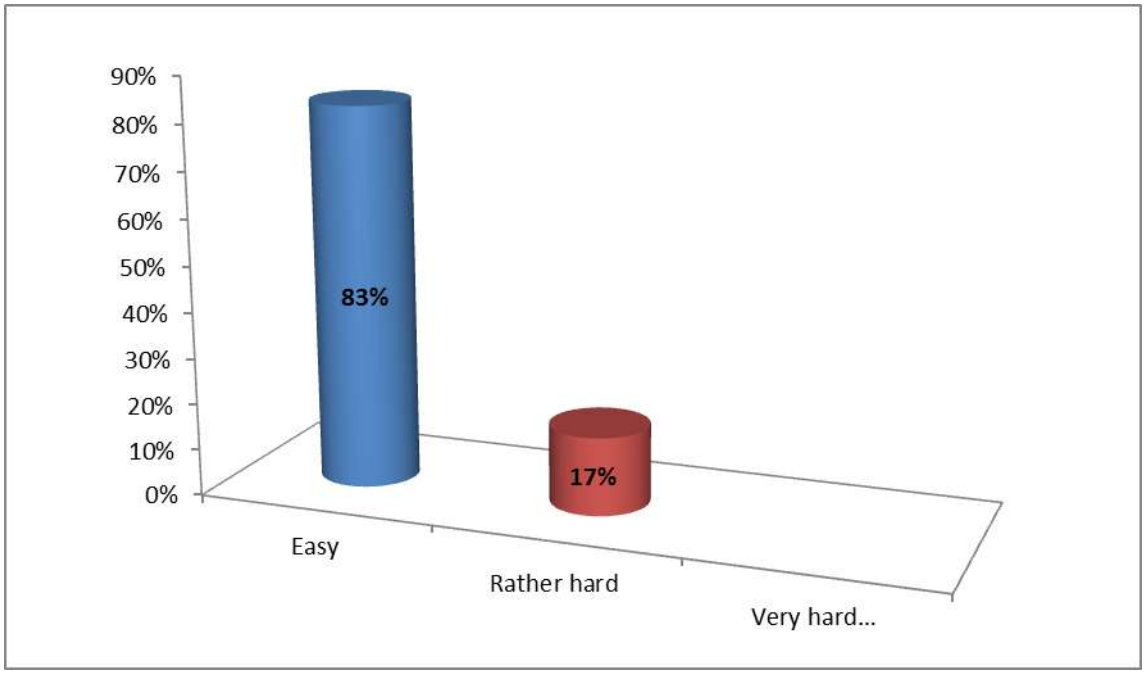

Figure 22-First steps in the app: Signing in

Concerning the signing in the application the most part of seniors considered easy 83% and only 17% rather hard.

1.7-Enter a departure, destination

1.7.1-Usability

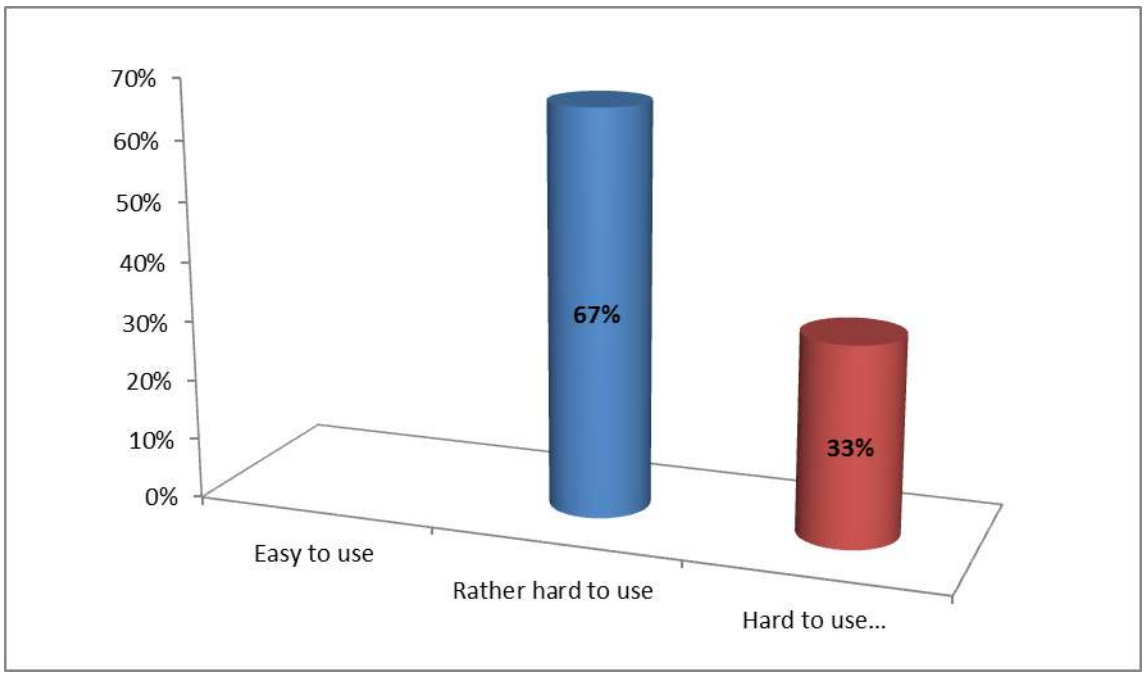

Figure 23-Enter a departure, destination: Usability

In general way the seniors considered difficult to introduce a departure or a destination in the application, 67% commented rather hard to use it and 33% commented hard to use it**.**

The main reasons mentioned by the users were:

- Font size very small in above commands, in Departure/ Destination text table and in the message texts.
- It is necessary to include the complete name of the street and it is difficult to see the overall content in the text table (departure or destination).
- Not all Badajoz streets were available.
- Some errors in the name of Badajoz zones. For example a route in the city center: *Plaza de España 1, Badajoz* inside departure or destination text table appears: *Plaza de España 1, Las Vaguadas, Badajoz.* Las vaguadas is a zone that belongs Badajoz but it is outside city center.
- In some cases appeared streets from other cities and countries.
- Difficult to write in mobile touch screen.

1.7.2-Changing of them

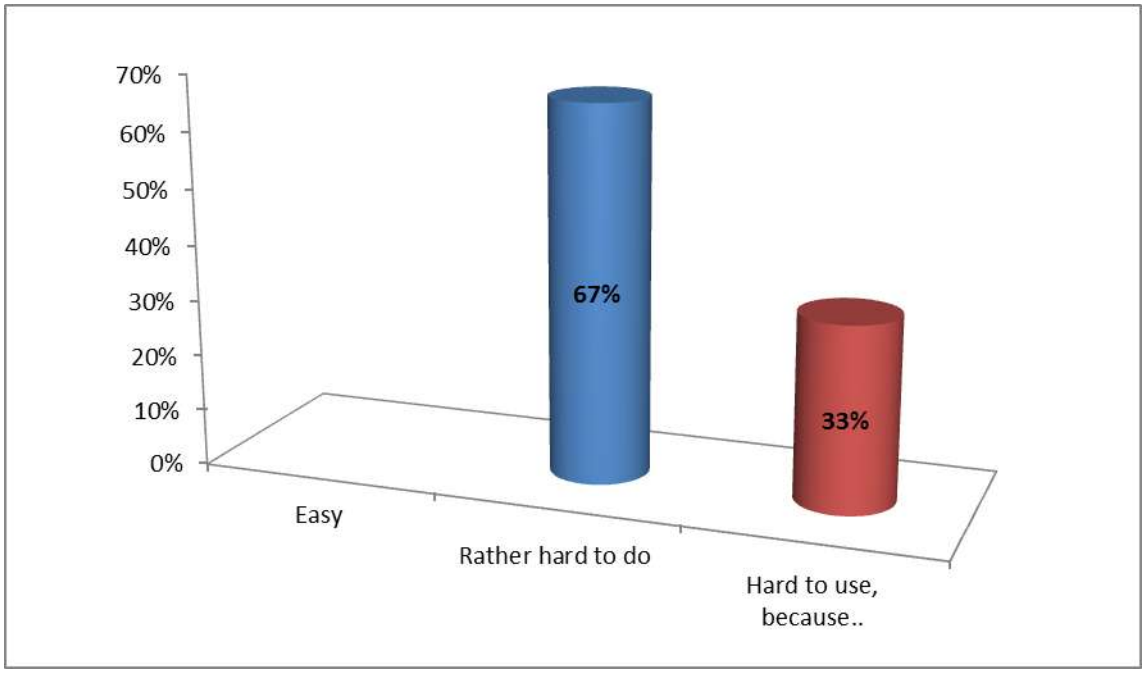

Figure 24-Enter a departure, destination: Changing of them

Seniors considered difficult to do changes in the application by the same reasons in previous point (1.7.1). 67% commented rather to do and 33 % hard.

1.7.3-The way how they appear colors on the map is..

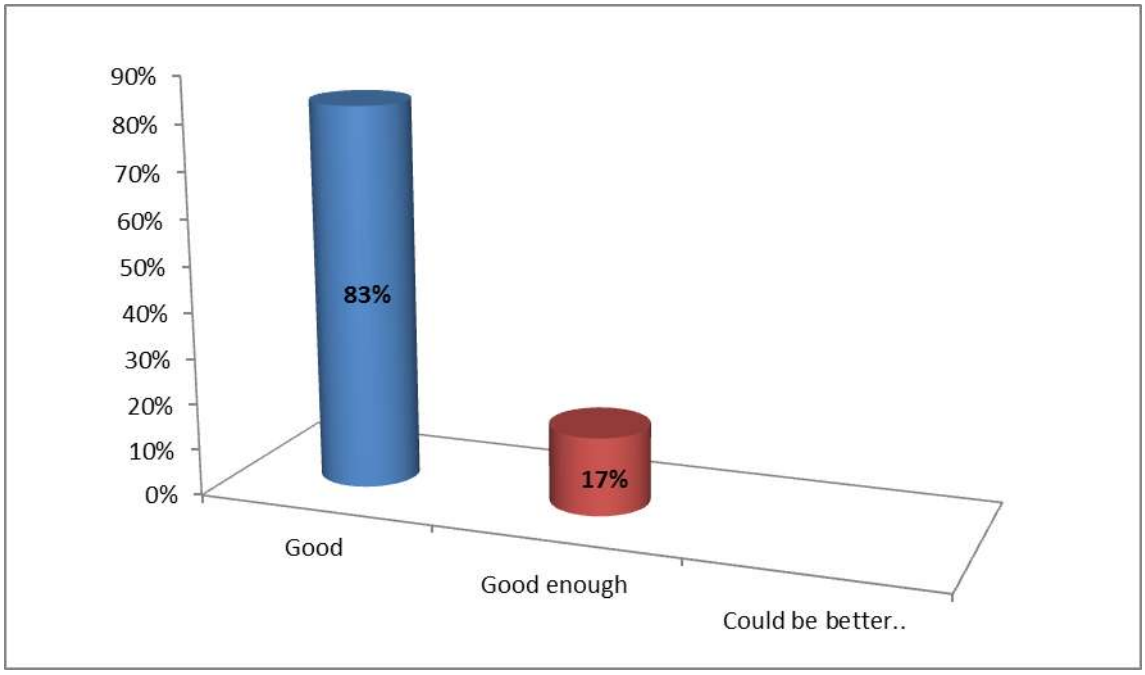

Figure 25-Enter a departure, destination: The way how they appear colors on the map is..

The most part of seniors are agreed with the way of how appear the colors on the map. 83% said good and only 17% said good enough.

1.7.4-The way how they appears size on the map is..

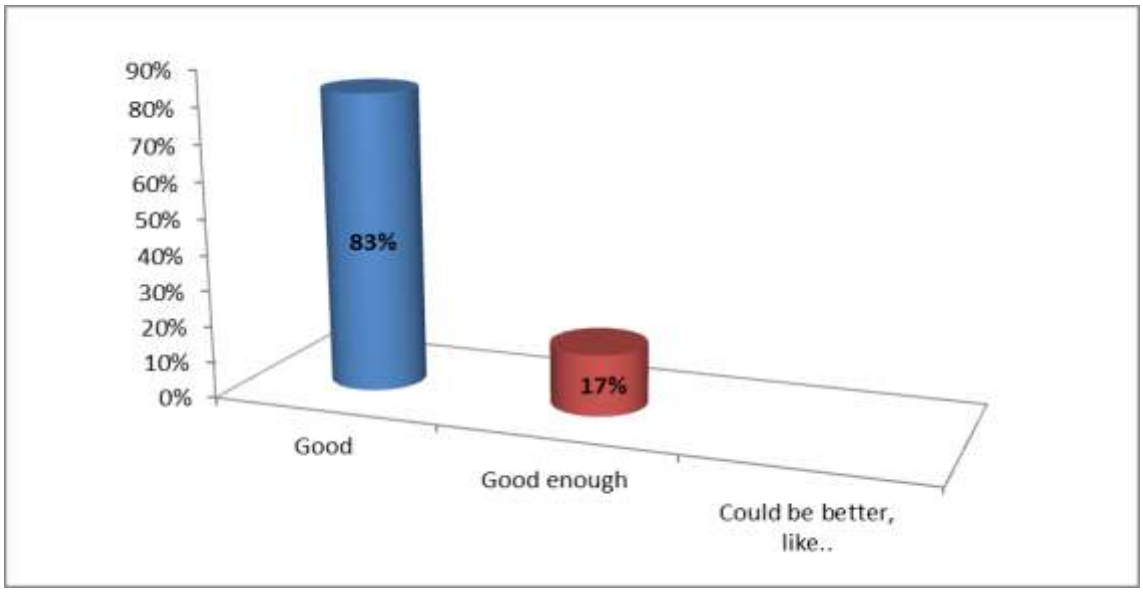

Figure 26-Enter a departure, destination: The way how they appear size on the map is…

In case of the way how they appear size on map 83% of seniors commented it is good and only 17% considered good enough. Seniors suggested it will be better if the zoom for the map will be available not only when the route is planned but also when the route beginning.

1.8-Route

1.8.1-The way how it appears colors in the map is…

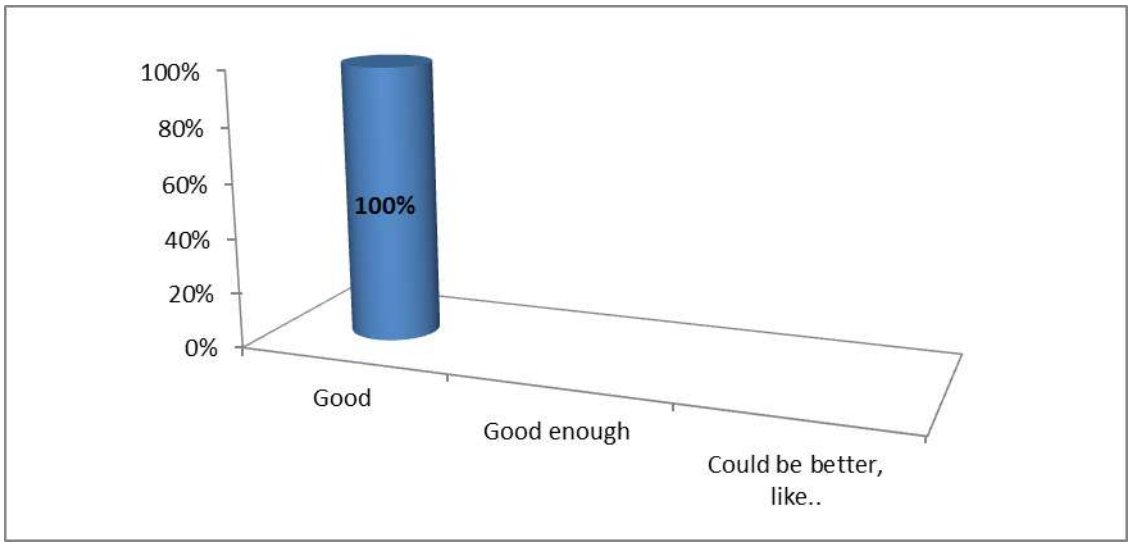

Figure 27-Route: The way how it appears colors in the map is..

The 6 seniors who tested the application considered the colors in the map good when the route is in course.

1.8.2-The way how it appears size in the map is…

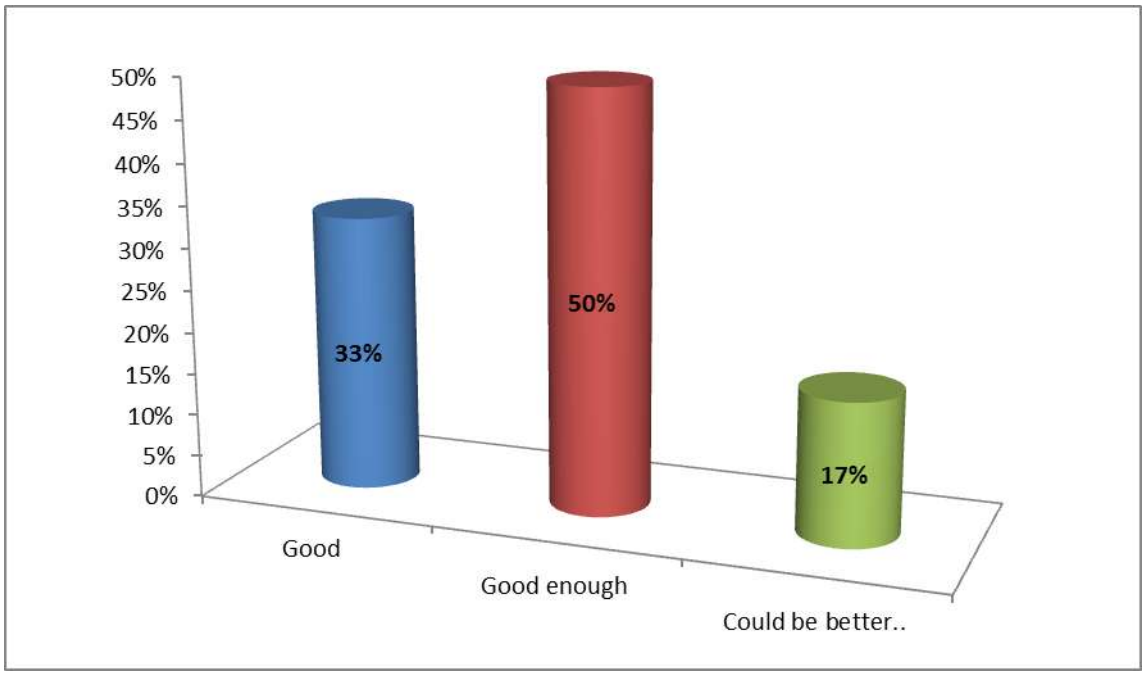

Figure 28-Route: The way how it appears size on the map is ..

When the route is in course 50% of seniors considered the way how it appears size on the map is enough good, 33% good and 17% commented it could be better with the use of zoom in the map, they also commented the POI's could be bigger.

1.8.3-If you want to change the route to do it is…..?

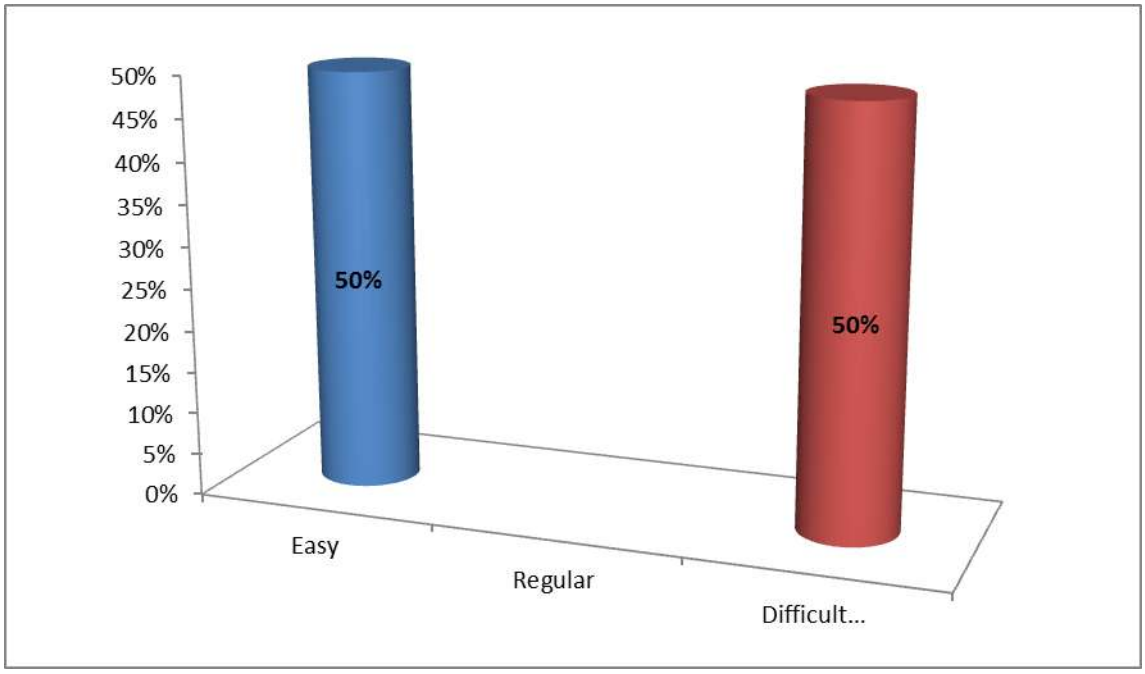

Figure 29-Route: If you want to change the route to do it is…?

In this case according their ability 50% considered easy and 50% considered difficult to change the route. The seniors commented it is easy to accept the change of route, when appears the text message: Do you want to change the route? And they only have to click on accept or cancel, but as it is difficult to obtain the change of route because in the most part of the cases the app didn't do the change of route and if did it is after to accept the change of the route 4th or 5th times, then they considered difficult to have a change of route.

1.8.4-The color of arrows showed are…

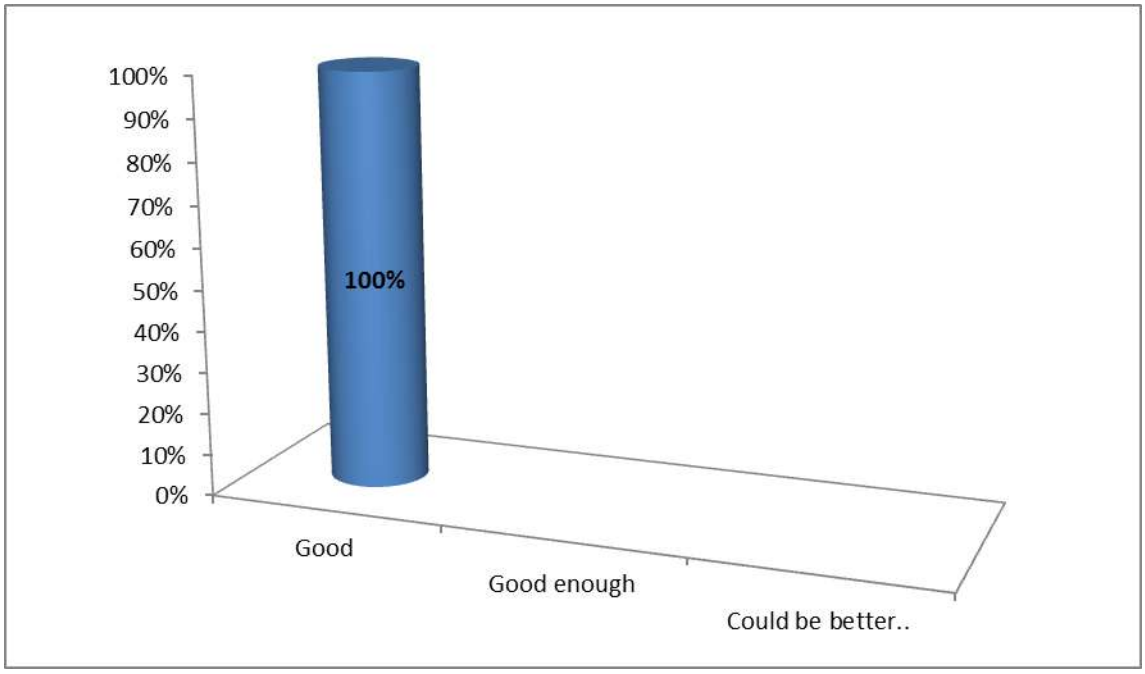

Figure 30-Route: The color of arrows showed are..

The 100% of seniors considered the color arrows are good, but the most part of them mentioned they must be bigger as well the text. Sometimes the text appeared in English (in route indications).

1.8.5-The meanings of the arrows showed are…..

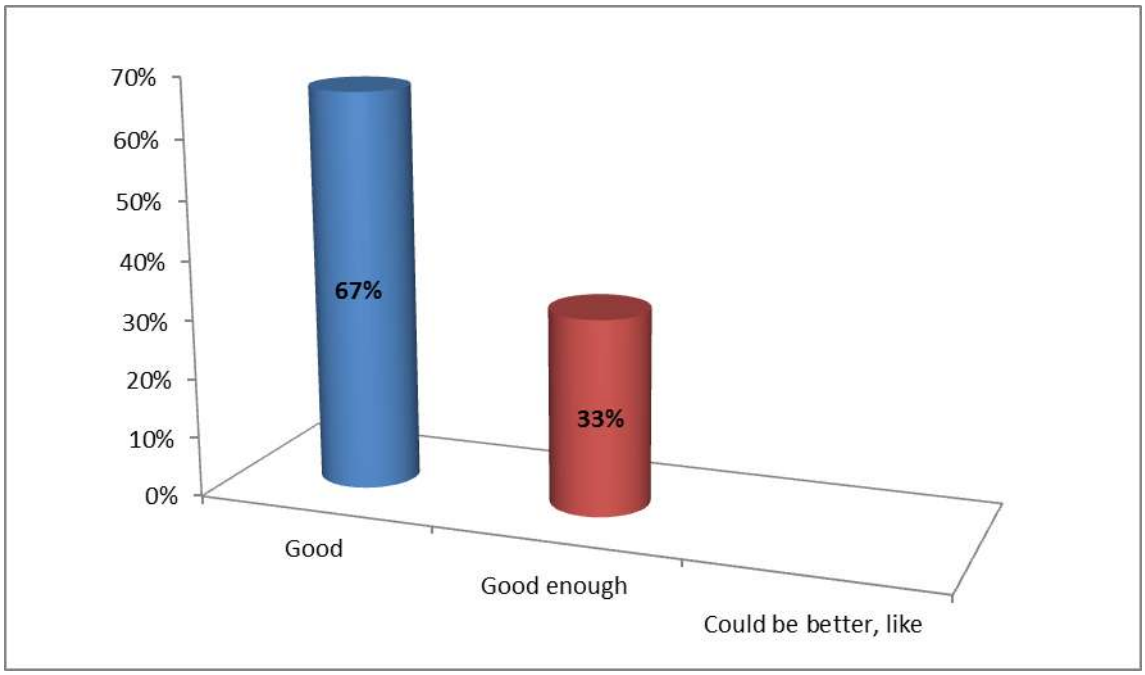

Figure 31-Route: The meanings of the arrows showed are…

The 67% considered the meaning of arrows are good and 37% considered good enough. But in several cases in the route they mentioned the arrows appeared in the wrong way relating the correct route planned in the map (see images in conclusions).

1.9-Screen

1.9.1-Images and letters

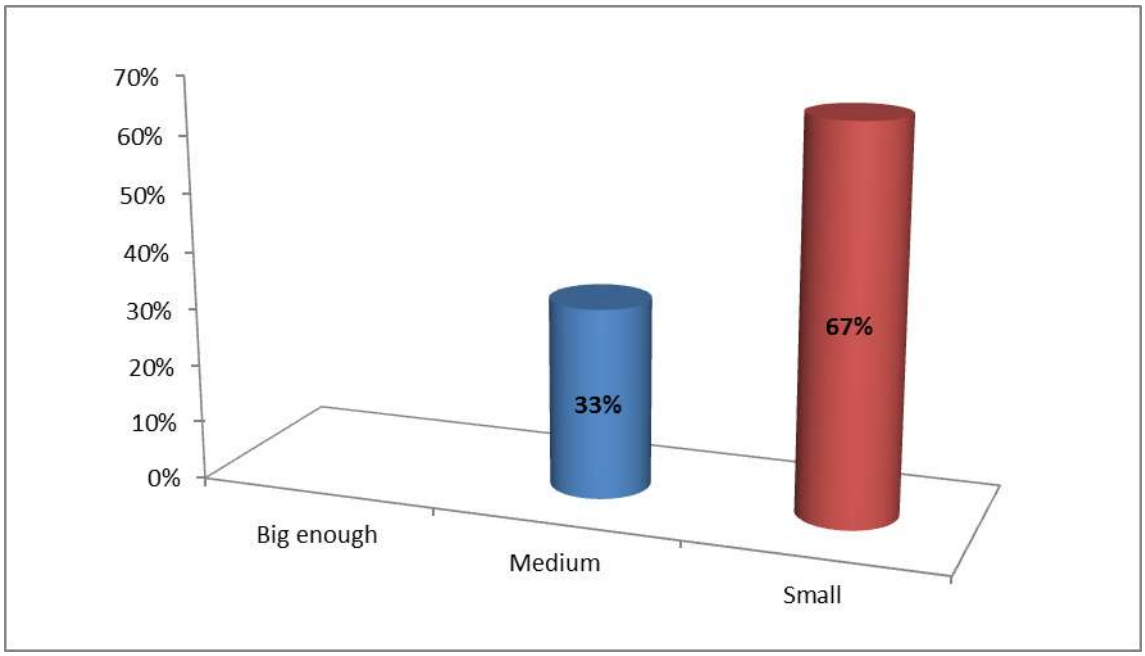

Figure 32-Screen: Images and letters

In general way the seniors commented the images and letters must be bigger. It was very difficult for the seniors to read the text including using their glasses.

1.9.2-The font type is….

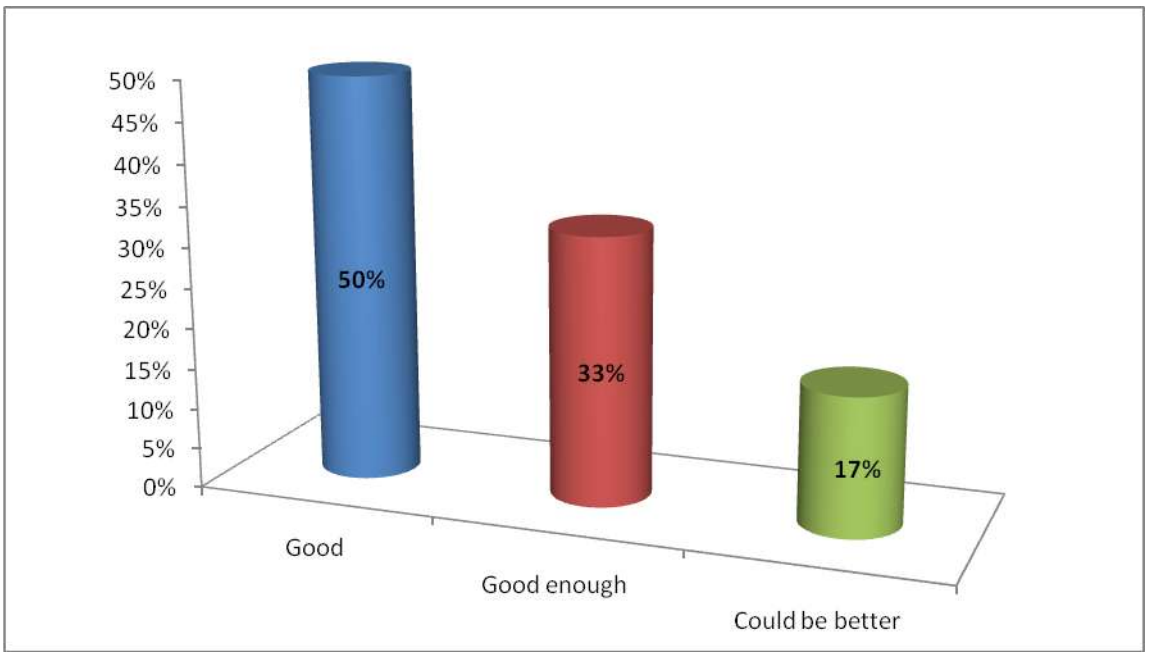

Figure 33-Screen: The font type is…

About the font type 50% considered good, 33% considered good enough and only 17th could be better. But again all of them recommended having bigger letters and images.

1.9.3-Brightness of the screen is…

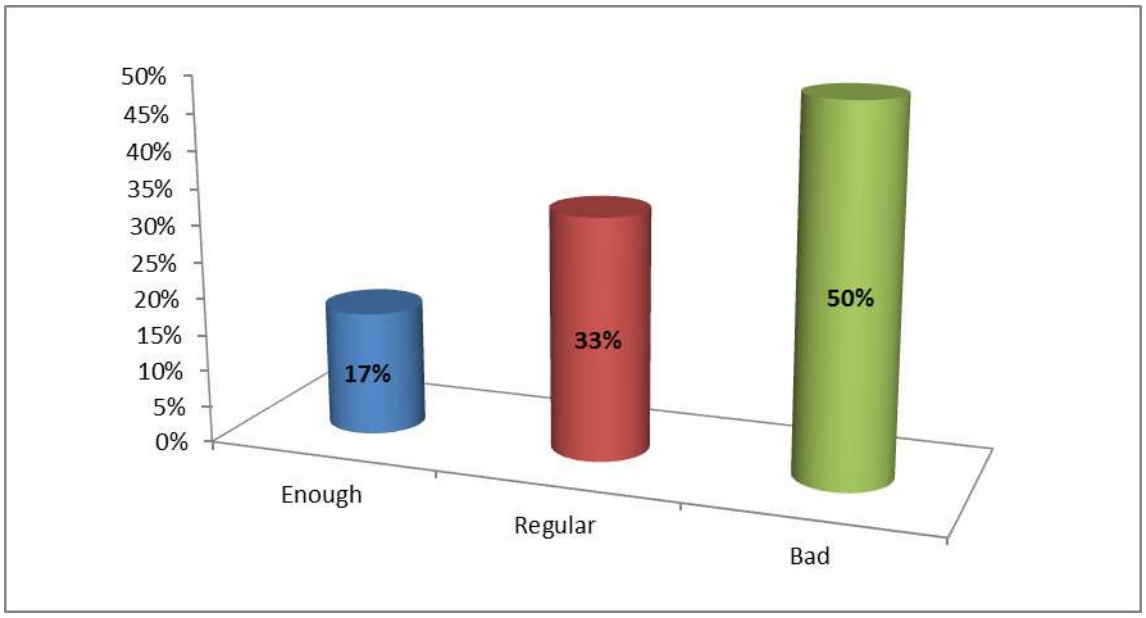

Figure 34-Screen: Brightness of the screen is….

Concerning the screen the most part of the seniors considered the screen must be improved it was difficult to see the app in the mobile with the sun.

1.9.4-The information on the sites are….

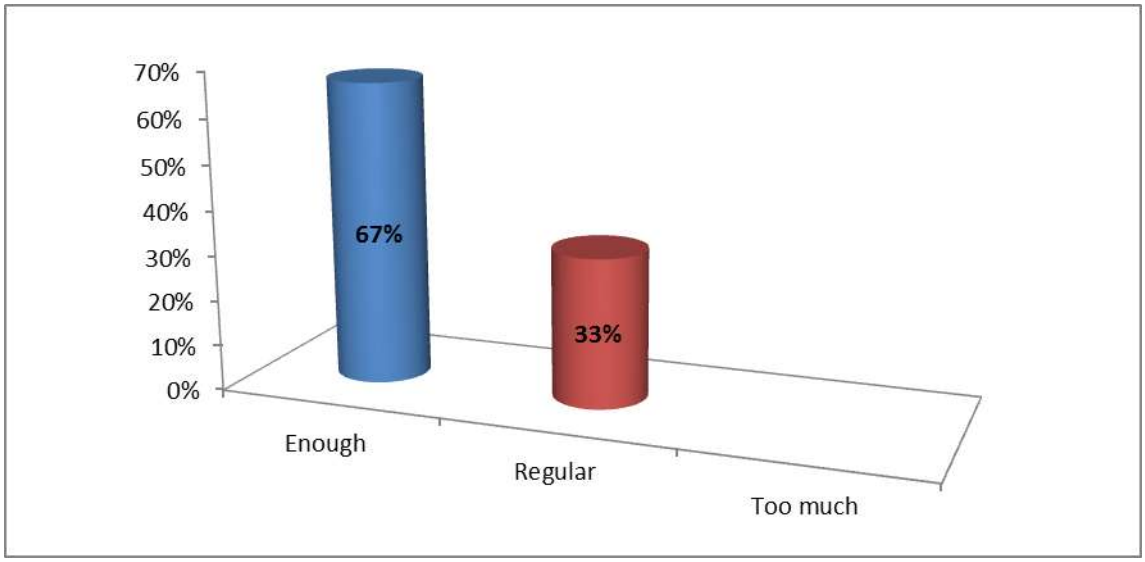

Figure 35-Screen: The information on the sites are…

67% of seniors considered enough the information on sites and 33% of them considered regular. In spite the most part of them considered that they didn't see POI's or saw few in some Badajoz zones.

1.10- POI's

1.10.1- Your profile settings and POI's showed to you…?

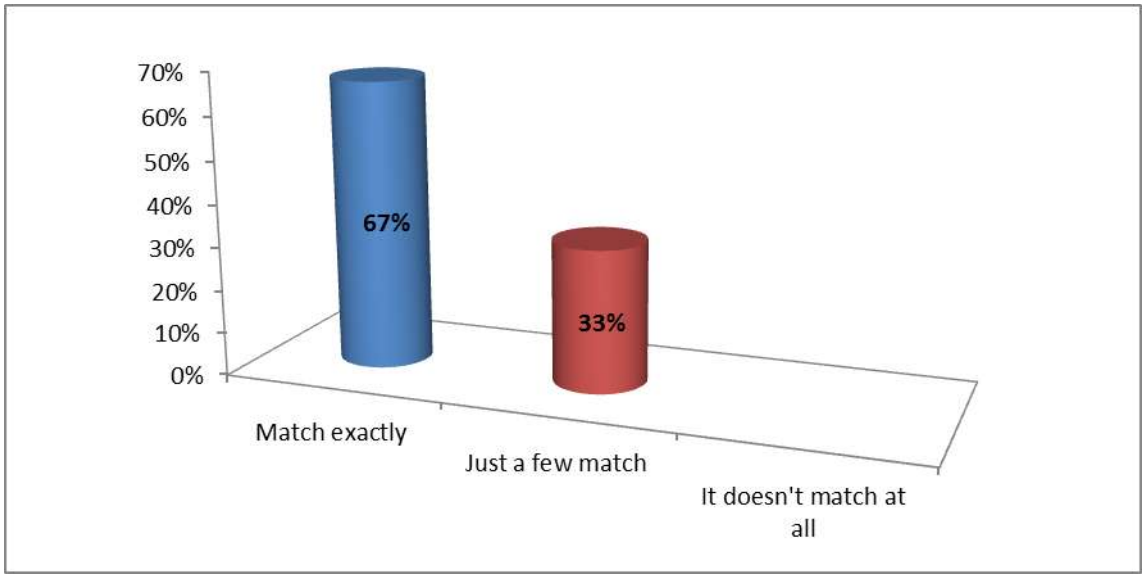

Figure 36- POI's: Your profile settings and POI's showed to you…?

In case of POI's showed 67% of seniors considered match exactly and 33% considered just a few matches.

1.10.2-POI's simbology is understable…?

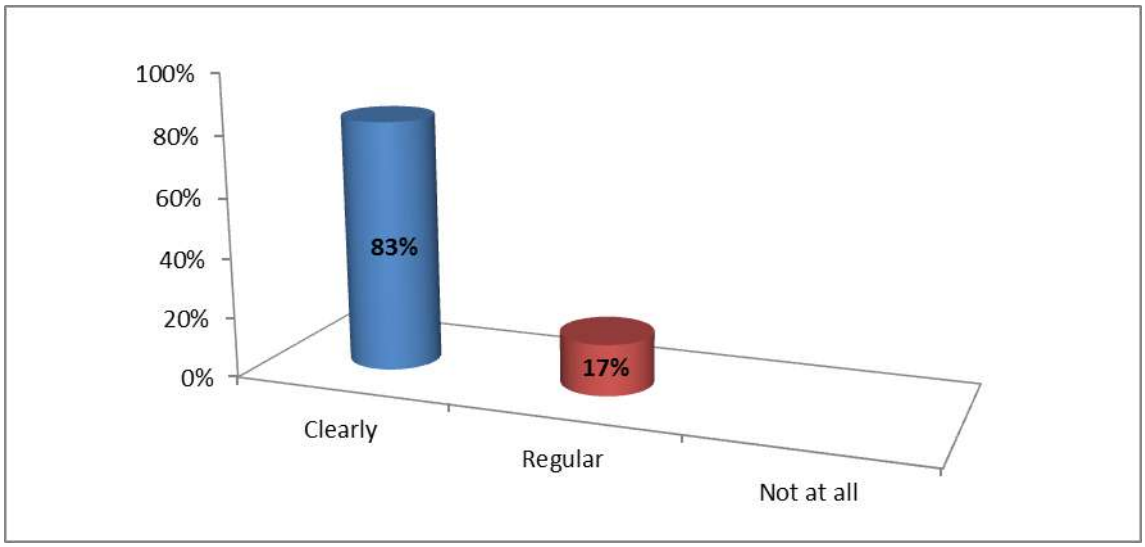

Figure 37- POI's: POI's simbology is understandable…?

The most part of the seniors (83%) considered the POI's simbology is clearly understandable and only 17% considered it is regular understandable. They commented the POI's could be bigger.

1.10.3-POI's showed along the route are….?

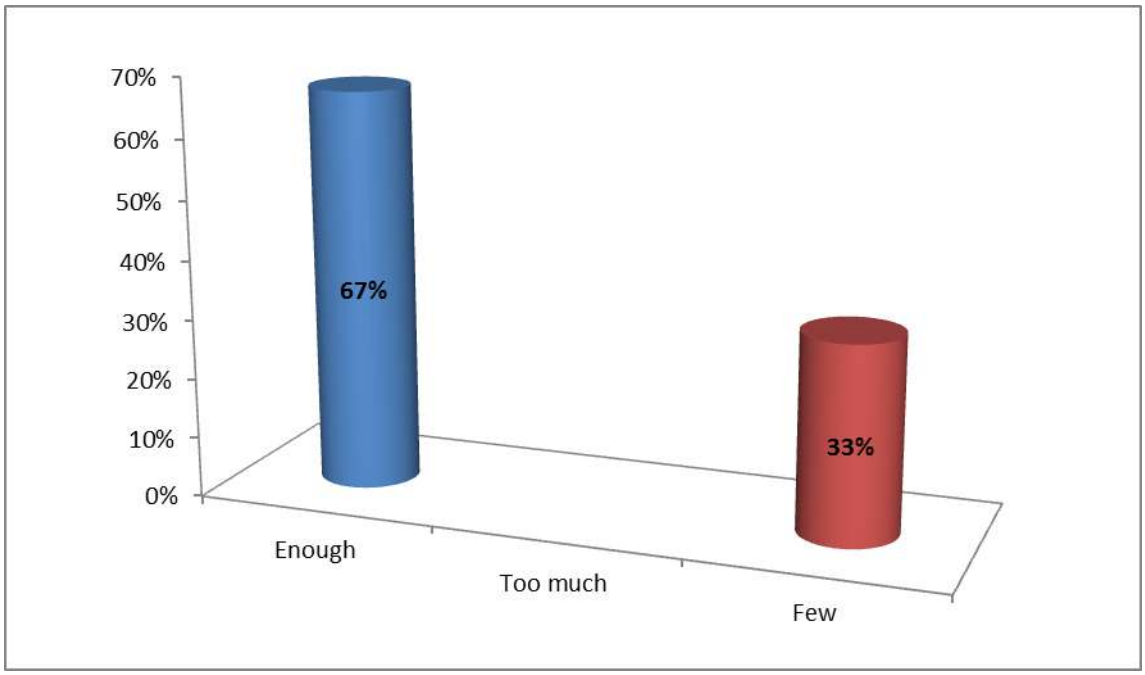

Figure 38- POI's: POI's showed along the route are…?

Relating the POI's showed along the route 67% of users commented were enough and 33% commented are few. The last one commented that in some Badajoz zones are few POI's and in others zones didn't exist any POI's.

1.11-Suggestions:

- Use a different procedure in registration; the seniors considered difficult the actual procedure, the most part of them don't have e-mail address. They suggest the registration by sms.
- Seniors suggested will be better if the zoom on the map will be available not only when the route is planned but also when the route beginning.
- Seniors suggested the letters, images and POI's could be bigger. It was very difficult for the seniors to read the text including using their glasses.
- The command voice must be always present in the beginning/end of the route, as well in the direction change or when the users take a wrong way, sometimes disappeared in these cases.
- Seniors recommend improving the data introduction in the departure/ destination table. When they introduce the data address it is impossible to see all the different options that appear and they can't see the overall text content to choose the right one. Sometimes they choose one street and it is a street from other city.
- To improve the concretion in meters in the above commands, the indication is different of route map. In all cases there was a difference in meters in the above commands (between 10-20 meters) relating with correct point reflected in the map.
- The screen brightness must be improved according the seniors needs, it is difficult to see WayFiS application with sun.
- To improve the efficiency and precision of the arrows and indications in above commands they functioning with a lot of errors.

3. Conclusions:

The main reasons mentioned by the users were:

- Difficulties in the registration procedure.
- Small letters, images and icons.
- Difficult to write in mobile touch screen.
- It is necessary to have better computer and mobile skills to use the app.
- Not all Badajoz streets were available and mistakes in Badajoz Zones.

- In the departure and destination address it is necessary to include the complete name of the street and it is difficult to see it the overall text content in the text table (departure or destination).

- Some errors in the name of Badajoz zones. For example a route in the city center, *Plaza de España 1, Badajoz* inside departure or Destination table appears: *Plaza de España 1, Las Vaguadas, Badajoz.* Las vaguadas is a zone that belongs Badajoz but it is outside city center:

Image 3-Error example 1

- In some cases appeared streets from other cities and countries.

- The seniors commented it is easy to accept the change of route, but it is difficult to obtain the change of route (at 4th times in the most part of the cases or don't do it).

- The most part of users mentioned the arrows must be bigger as well the text in above command. Sometimes the text appeared in English (in route indications).

- In the route in several cases they mentioned the arrows appeared in the wrong way relating the correct route planned in the map:

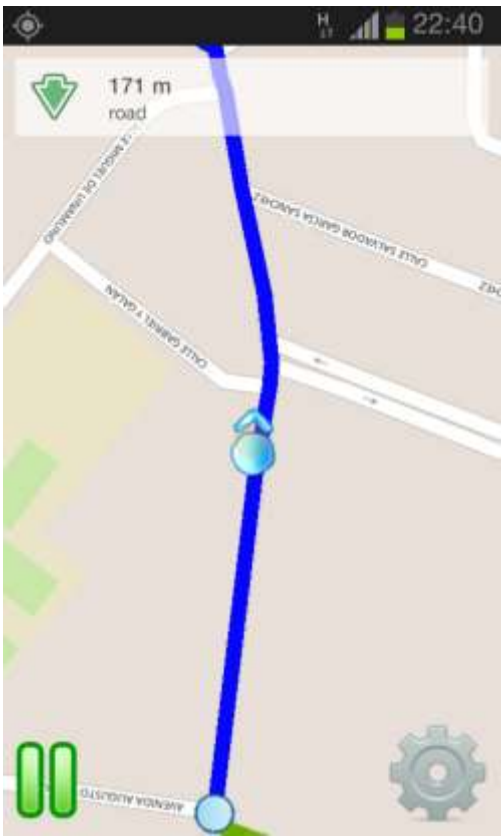

Image 4-Error example 2

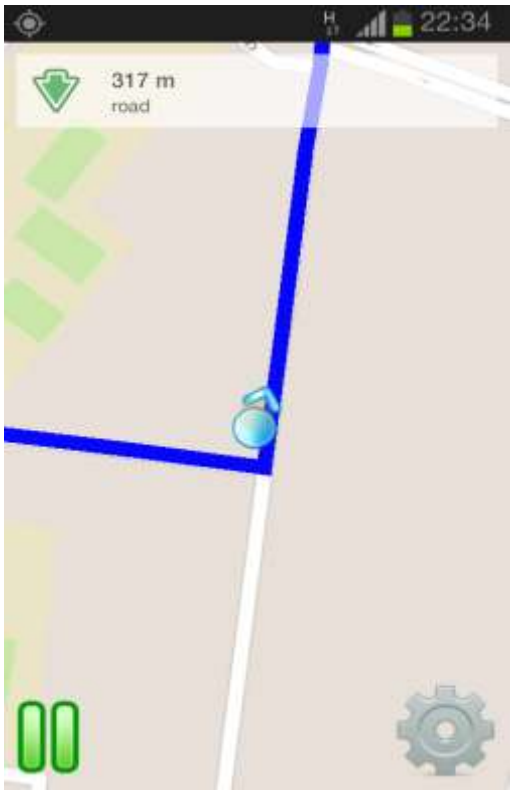

Image 5-Error example 3

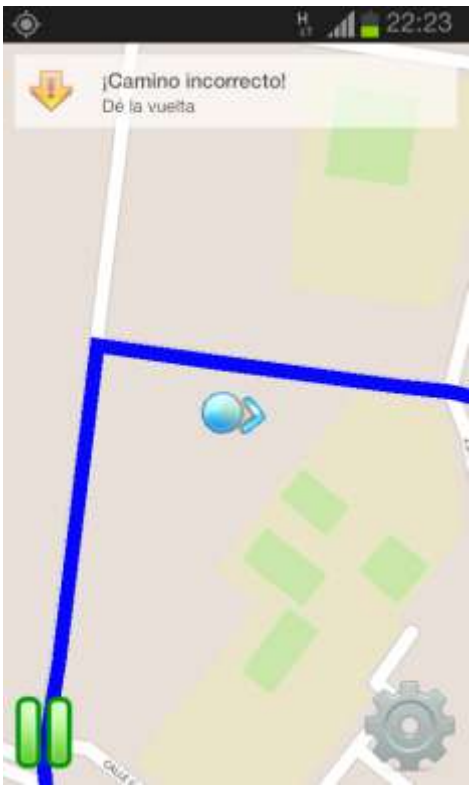

Image 6-Error example 4

- Sometimes seniors had the correct route and appeared the following message:

Image 7-Error example 5

- Concerning the screen the most part of the seniors considered the screen must be improved it was difficult to see the app in the mobile with the sun.
- Some seniors commented that in some zones are few POI's and in others zones didn't exist POI's.
- The voice command disappears in some routes or don't exist in any moment of other routes planned. Sometimes happens a mix between English and Spanish language.
- When the route is in course the numbers of meters till the next step or destination in the above command are incorrect (normally a difference between 15 -20 meters) but in the map the route the distance seems correct.
- When the mobile turn the letters in the menu overlap.

Image 8-Error example 6

- It can be mentioned others errors in the app, when it was included an intermediate point appeared the following text in English:

Image 9-Error example 7

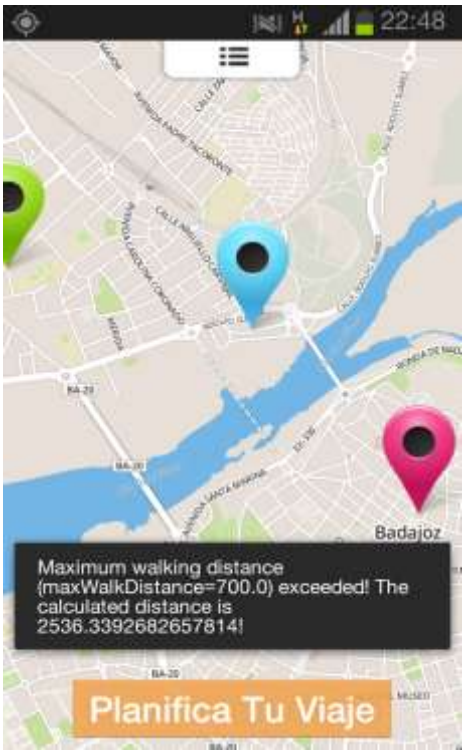

Image 10-Error example 8

2-Web tests

The web tests was developed in elderly home care "Puente Real" on 10th July with the participation of 4 seniors with age between 63 and 77 years old. Initially CETIEX did a presentation of WayFiS web application and its functionalities. After that seniors entered in the web application, filled their profile settings, reviewed the web functionalities and planned some routes. Finally they reflected their opinions and suggestions in usability questionnaires.

USABILITY QUESTIONNAIRE	
Data	
Name	
Age	
Gender	☐ Male 50% ☐ Female 50%
Place of residence	☐ Big city (over 500 thousand) ☐ medium sized city (100-500 thousand) 75% ☐ small town (10-100 thousand) ☐ village 25%
Level of education	☐ No education/primary school ☐ Secondary school 25% ☐ College (diploma) ☐ University 75%
Current employment status	☐ Free lancer ☐ Employee 25% ☐ Civil servant ☐ Labourer ☐ Housewife/-man ☐ Retired 75%

	☐ other_____	
Computer skills	☐ Very high	
	☐ Rather high	25%
	☐ Rather low	25%
	☐ Very low	25%
	☐ Non	25%
First steps in the app	Time to switch on	
	☐ 1secons-10 seconds	100%
	☐ 10- 20 seconds	
	☐ 20 -30 seconds	
	☐ More than 30 seconds	
	Registration	
	☐ Easy	
	☐ Rather hard	
	☐ Very hard, because ……	100%
	Signing in	
	☐ Easy	100%
	☐ Rather Hard	
	☐ Very hard, because ……	
Enter a departure, destination	Usability	
	☐ Easy to use	75%
	☐ rather hard to use	25%
	☐ Hard to use, because ……	

	Changing of them ☐ Easy 100% ☐ Rather hard to do ☐ Hard, because ……
	The way how they appear color on the map is (mobile) ☐ Good ☐ Good enough ☐ Could be better, like ……
	The way how they appear size on the map is (mobile only) ☐ Good ☐ Good enough Could be better, like ……
Route	The way how it appear color on the map is ☐ Good ☐ Good enough 100% ☐ Could be better, like ……
	The way how it appear size in the map is ☐ Good 50% ☐ Good enough 50% ☐ Could be better, like…….
	If you want to change the route to do it is….? ☐ Easy 25% ☐ Regular 75% ☐ Difficult, because……
	The colors of the arrows showed are… ☐ Good ☐ Good enough

	☐ Could be better, like ……	100%
	The meanings of the arrows showed are… ☐ Good ☐ Good enough ☐ Could be better, like ……	100%
Screen	Images and letters are… ☐ Big enough ☐ Medium ☐ Small	100%
	The font type is ……. ☐ Good ☐ Good enough ☐ Could be better, like ……	100%
	Brightness of the screen is…(mobile) ☐ Enough ☐ Regular ☐ Bad	
	The information on the sites are ☐ Enough ☐ Regular ☐ Too much	100%
POI's (mobile only)	Your profile settings and the POI's showed to you…? ☐ Match exactly ☐ Just a few match ☐ It doesn't match at all	

	POI's simbology is understable…? ☐ Clearly ☐ Regular ☐ Not at all
	POI's Showed along the route are…? ☐ Enough ☐ Too much ☐ Few
Suggestions	Please feel free to share your opinion about the route planner

Table 6- WayFiS Usability tests results (Web application)

2.1 Gender

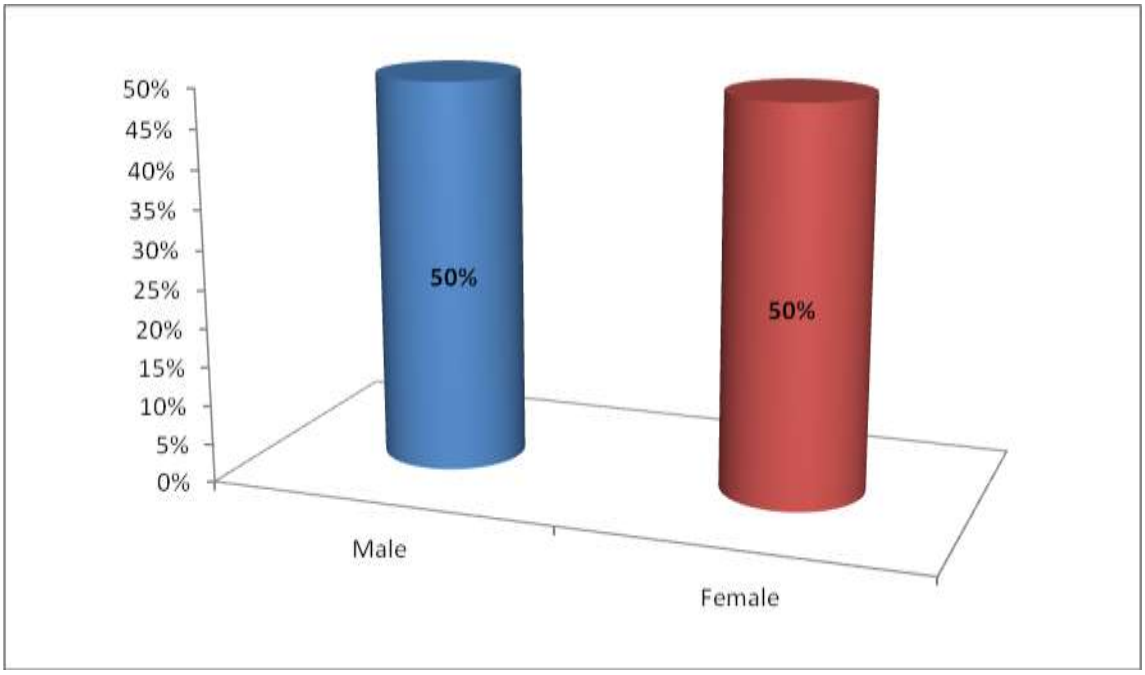

Figure 39-Gender

The tested were done by 4 seniors 50% women and 50% men.

2.2-Place of Residence

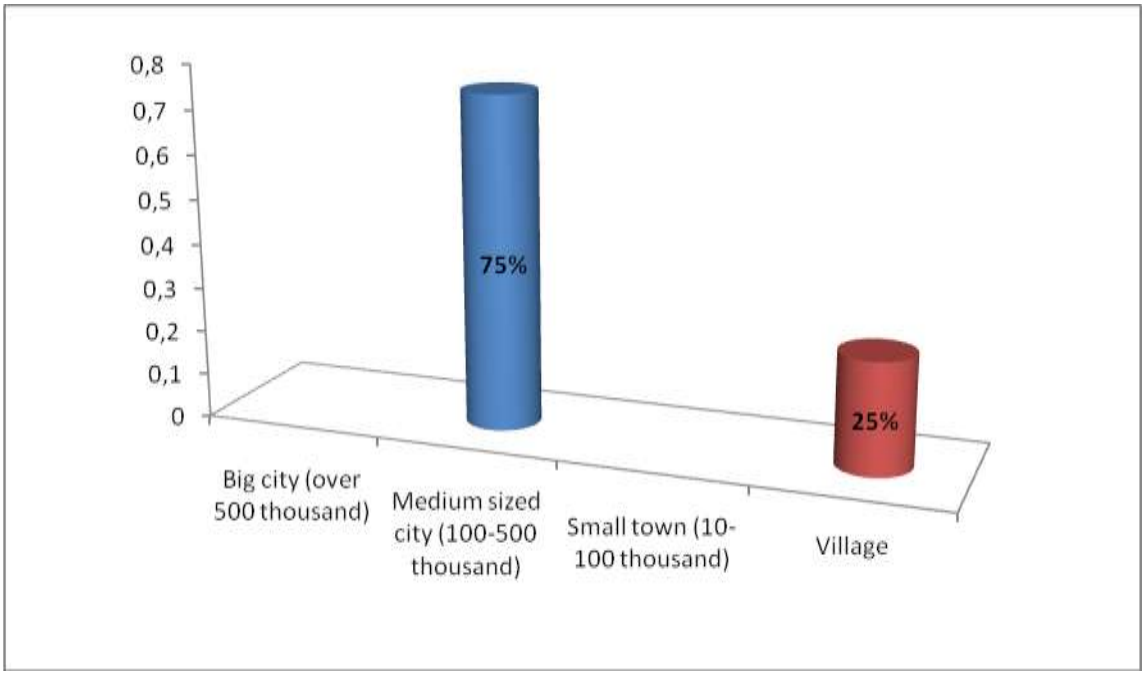

Figure 40-Place of Residence

75% of users tested have their place of residence in medium sized city and 25% in village, there weren't senior form big and small city.

2.3-Level of Education

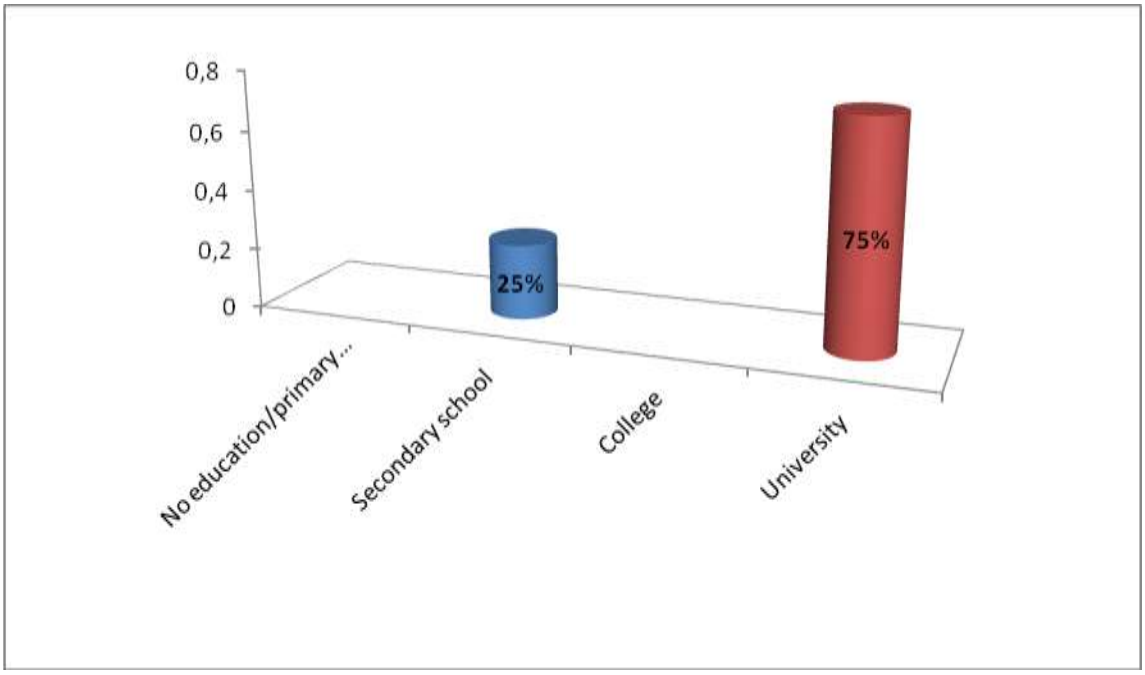

Figure 41-Level of education

Concerning level of education of seniors tested 75% had university degree and 25% secondary school.

2.4-Current employment status

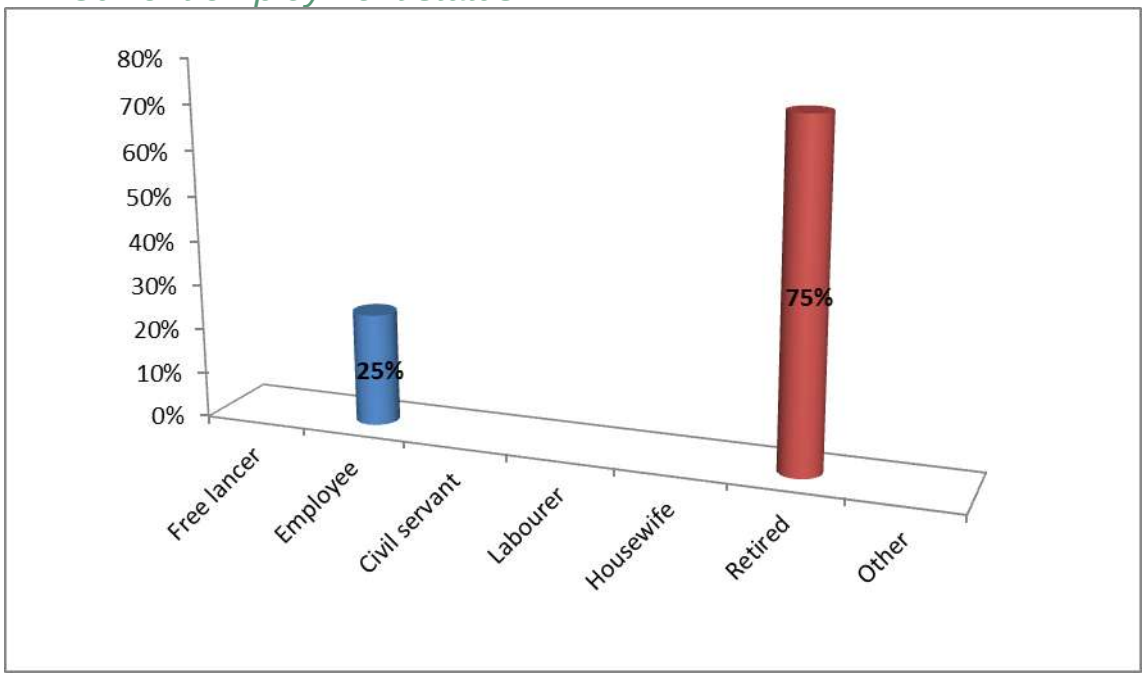

Figure 42-Current employment status

The majority of users tested 75% were retired and 25% employee.

2.5-Computer skills

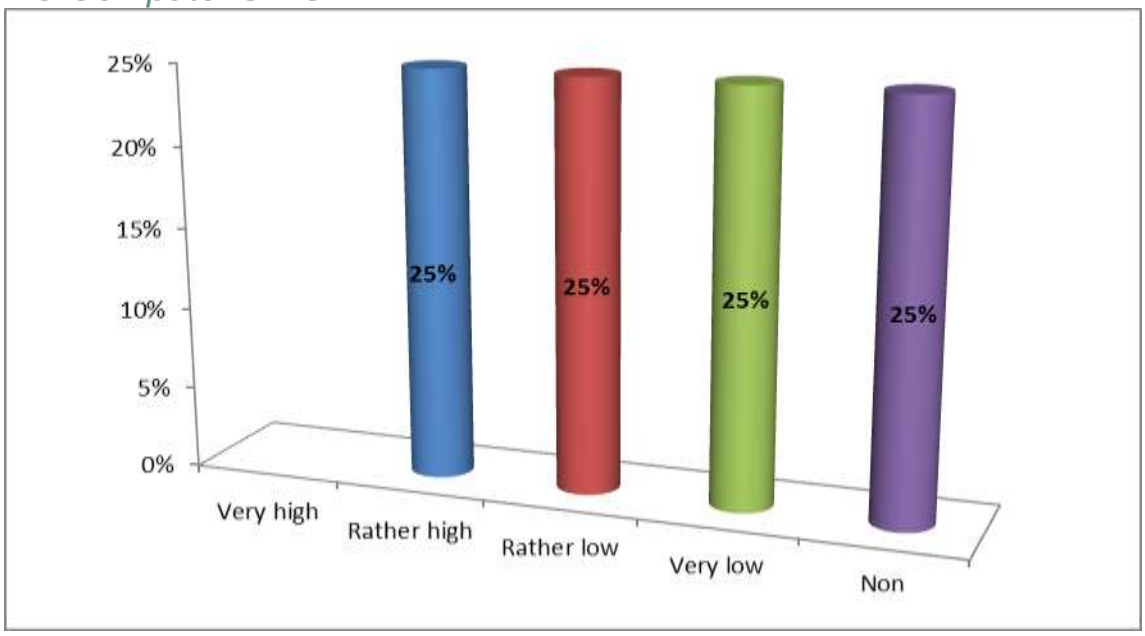

Figure 43-Computer skills

In overall seniors computer skills were low, 25% rather low, 25% very low, 25% had no computer skills and only 25% had rather high skills.

2.6-First steps in the app

2.6.1-Time to switch on

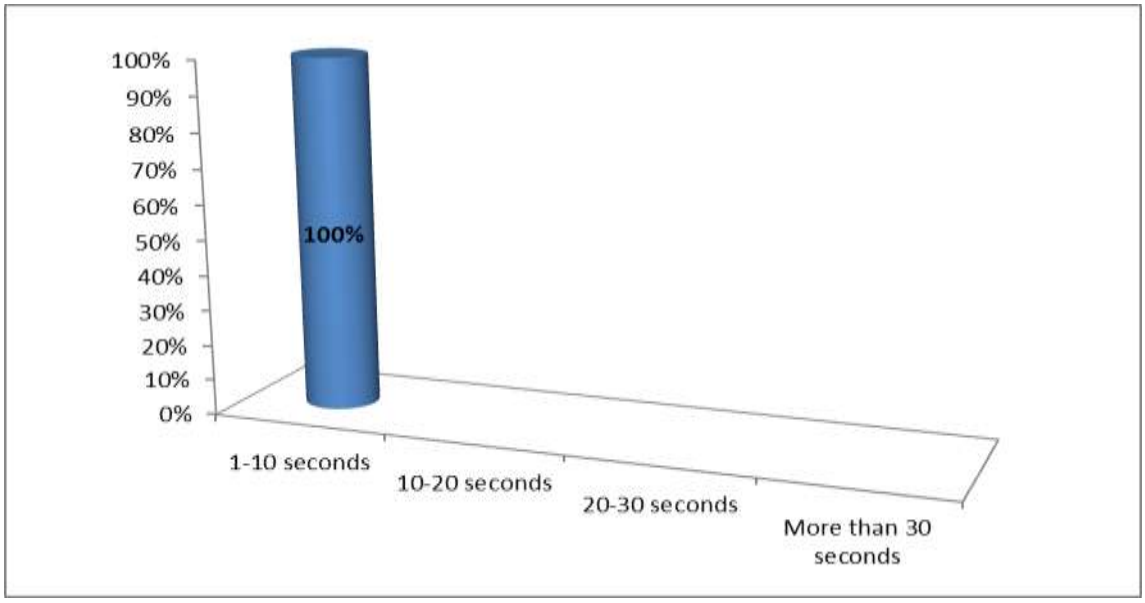

Figure 44-First steps in the app: Time to switch on

The totality of seniors tested considered switching on the web application very quick and easy.

2.6.2-Registration

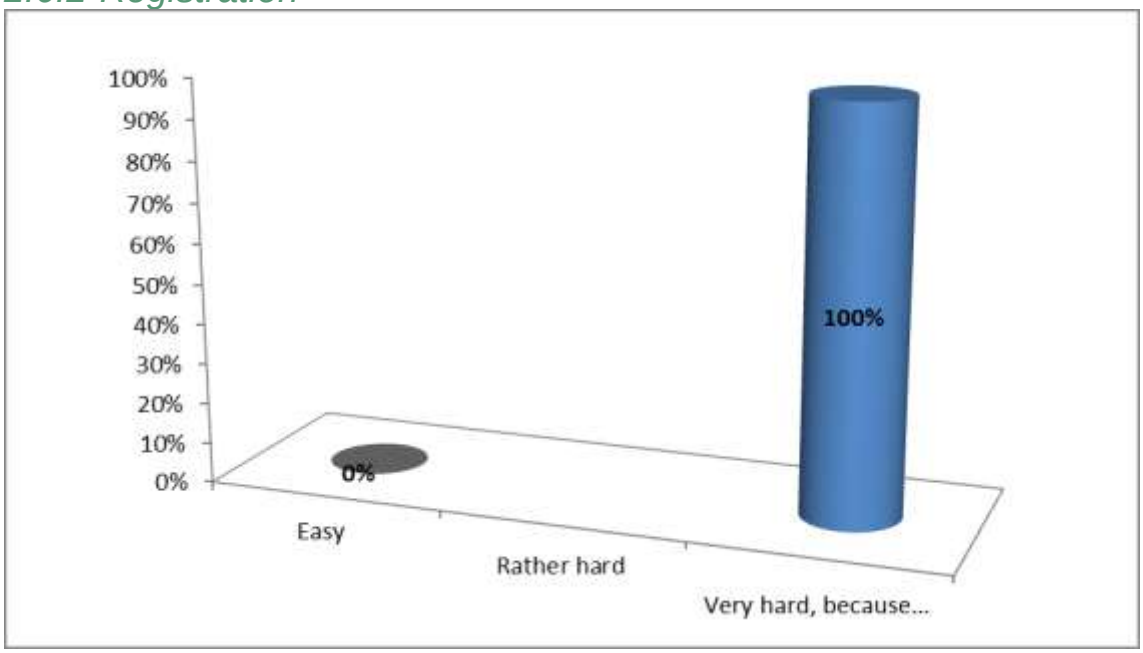

Figure 45-First steps in the app: Registration

As was verified in design questionnaires results the majority of seniors tested considered difficult the registration procedure. They commented again they haven't e-mail address to create the users and passwords. They recommended using other method.

2.6.3-Signing in

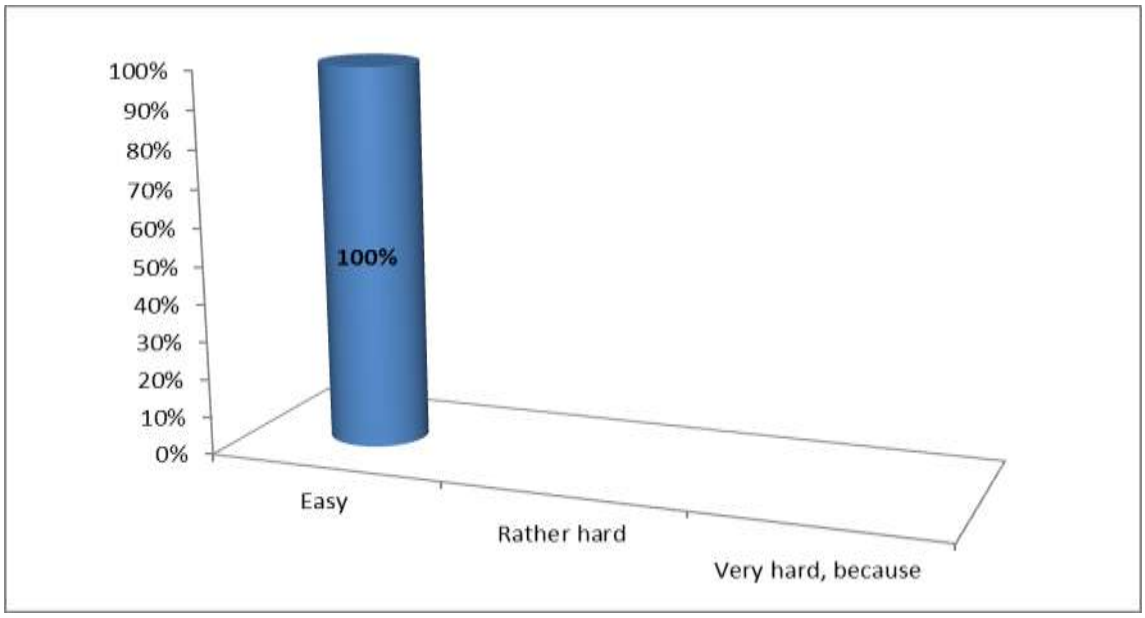

Figure 46-First steps in the app: Signing in

About the signing in web application they considered easy and quick after received their passwords.

2.7-Enter a departure, destination

2.7.1-Usability

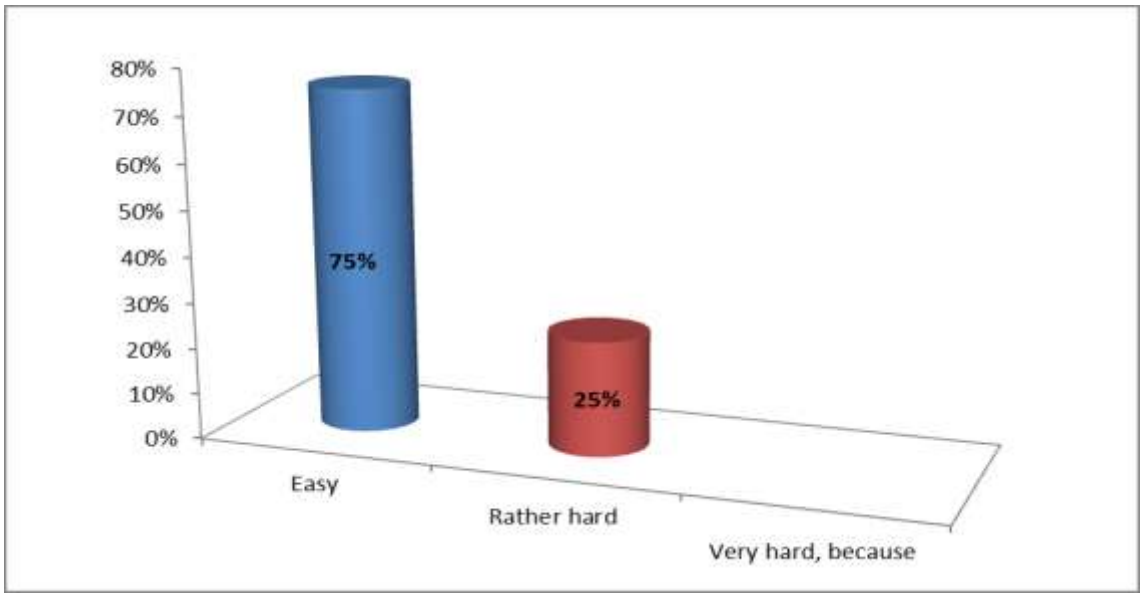

Figure 47-Enter a departure, destination: Usability

Concerning the use of web app 75% of users considered easy and 25% rather hard, in the last case due they had problems to find some Badajoz streets and they saw that some streets were in wrong Badajoz zones.

2.7.2-Changing of them

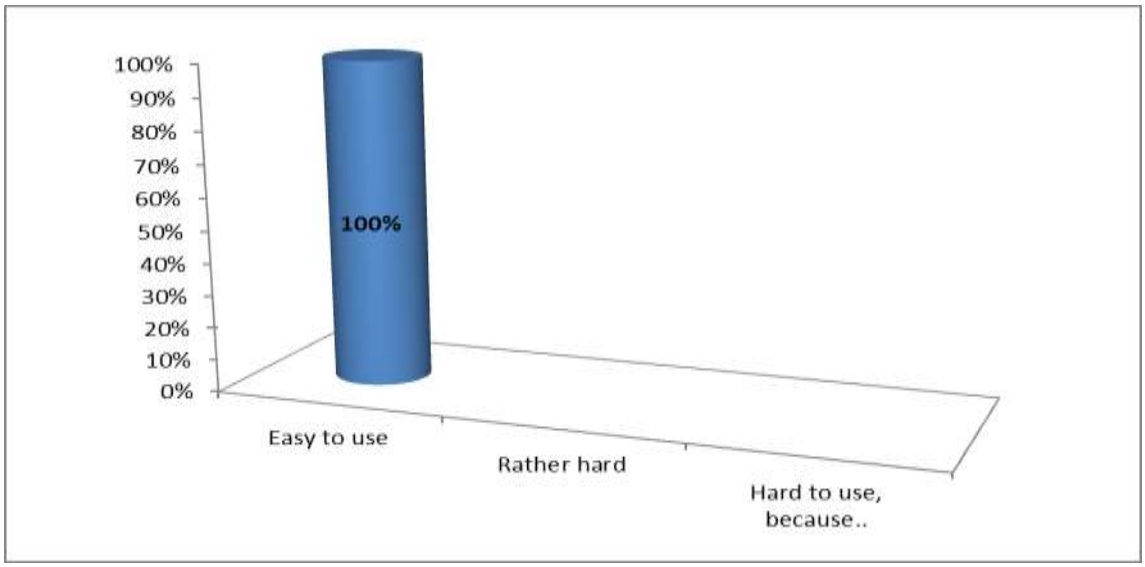

Figure 48-Enter a departure, destination: Changing of them

Seniors tested considered easy to change the routes, but it would be better if in route planner appear a “clear button” after or below departure/ destination text table. Only appear “clear button” below intermediate point table text and write it in Spanish and in English.

2.7.3-The way how they appear colors on the map is..

This question located in this part of questionnaire is destined only for mobile application test, in case of web application this question is answered in point 2.8.1.

2.7.4-The way how they appears size on the map is..

This question located in this part of questionnaire is destined only for mobile application test, in case of web application this question is answered in point 2.8.2.

2.8-Route

2.8.1-The way how it appears colors in the map is.

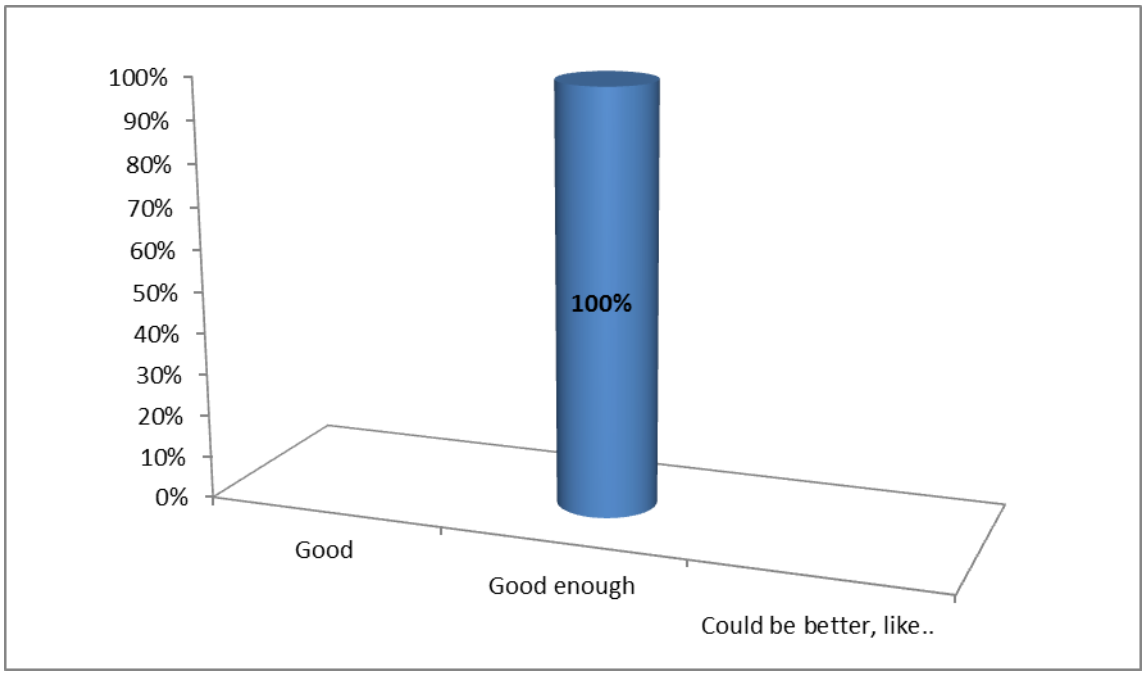

Figure 49-Route: The way how it appears colors in the map is..

The totality of seniors considered that colors in the maps could be improved with more colors, not only grey. They also considered the departure/destination and intermediate point could be bigger.

2.8.2-The way how it appears size in the map is…

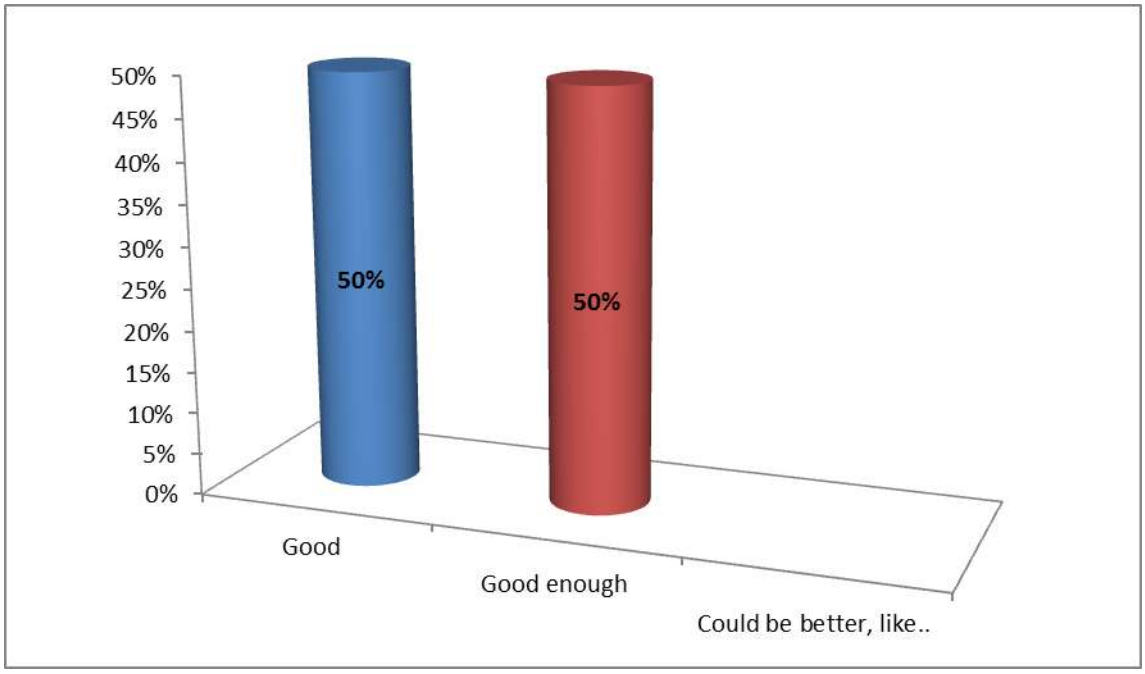

Figure 50-Route: The way how it appears size on the map is ..

Concerning the way how it appears size on the map 50% considered good and 50% considered could be better. In the last case they commented zoom could have more capacity to apply the route and to see with more clarity the streets names and localization of route points.

2.8.3-If you want to change the route to do it is…..?

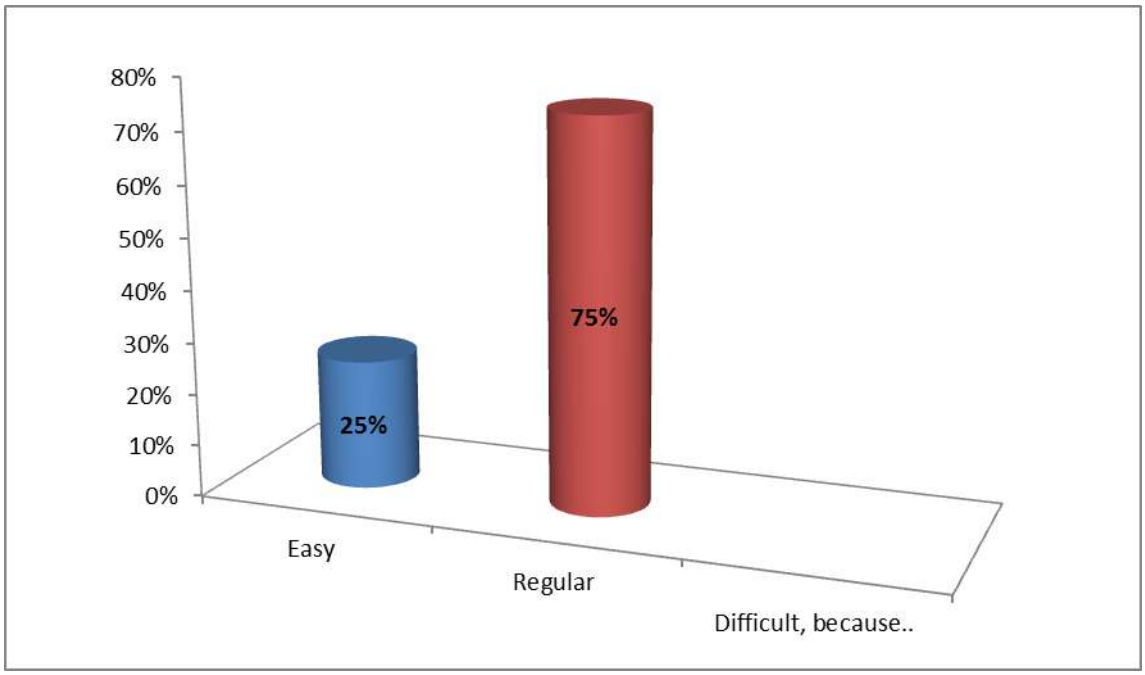

Figure 51-Route: If you want to change the route to do it is…?

When they had the route planned 25% considered easy to change the route and 75% regular. The last one commented that they have to delete the street names in departure and destination text table with computer delete button it will be better to include “clear button” for departure or destination button. Because in some cases they only wanted to change or departure or destination point not both.

2.8.4-The color of arrows showed are…

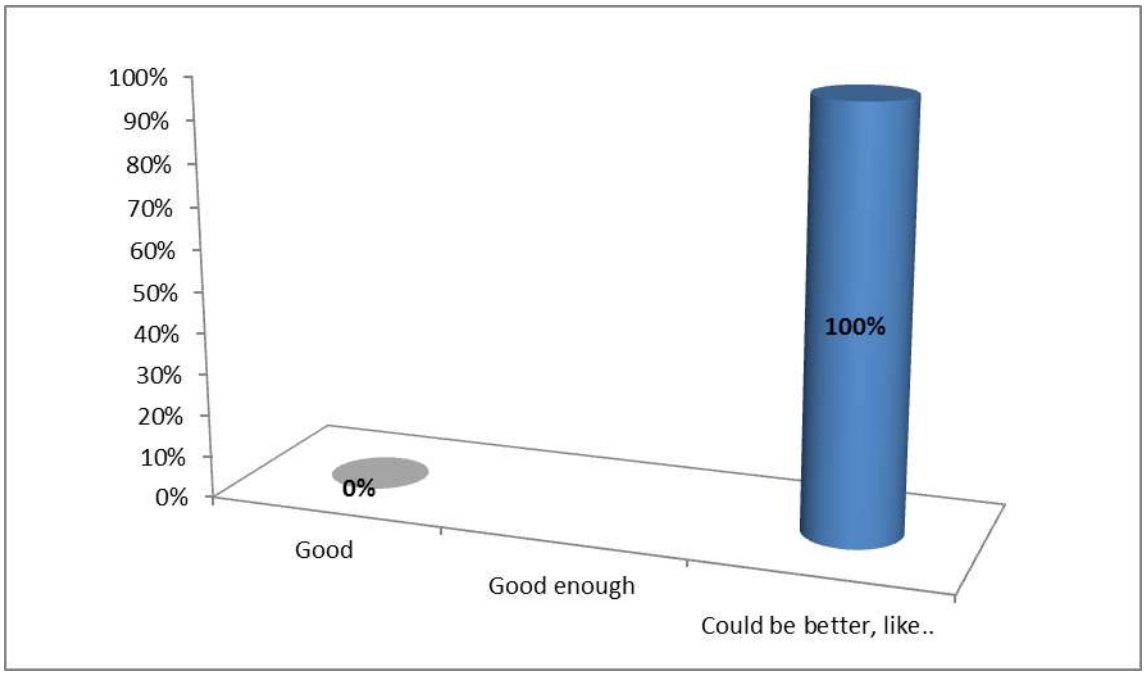

Figure 52-Route: The color of arrows showed are..

100% of seniors tested considered colors of arrows in route planner must be improved, they must be in others colors like green, red or blue not in grey. The size of arrows as well the font size must be bigger. Sometimes the indication text appeared in English as well the message errors.

2.8.5-The meanings of the arrows showed are…..

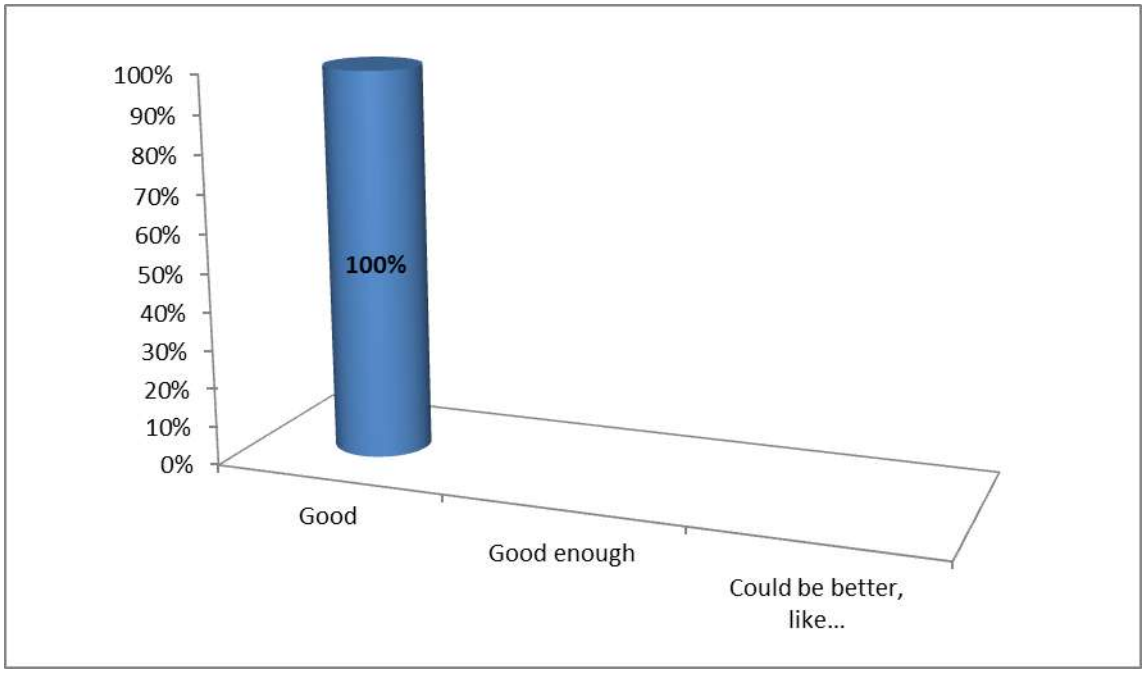

Figure 53-Route: The meanings of the arrows showed are…

For all the totality of the seniors the meanings of the arrows are clear.

2.9-Screen

2.9.1-Images and letters

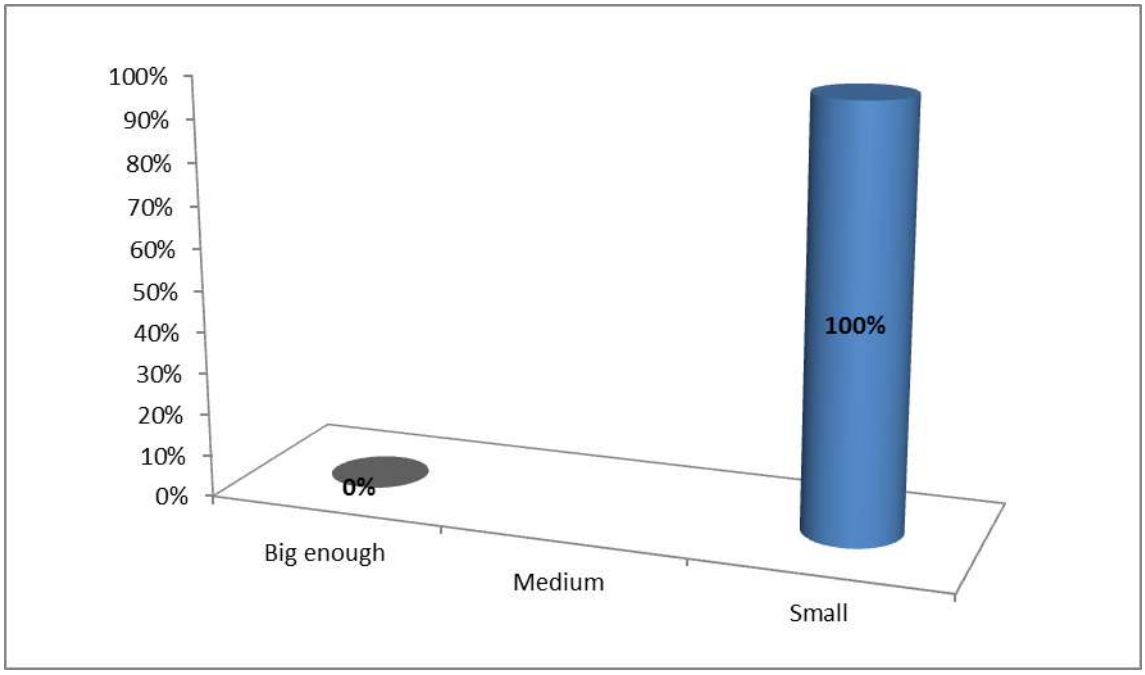

Figure 54-Screen: Images and letters

As happened in mobility tests results 100% of users considered the images and letters small, they suggested increasing the size of both.

2.9.2-The font type is….

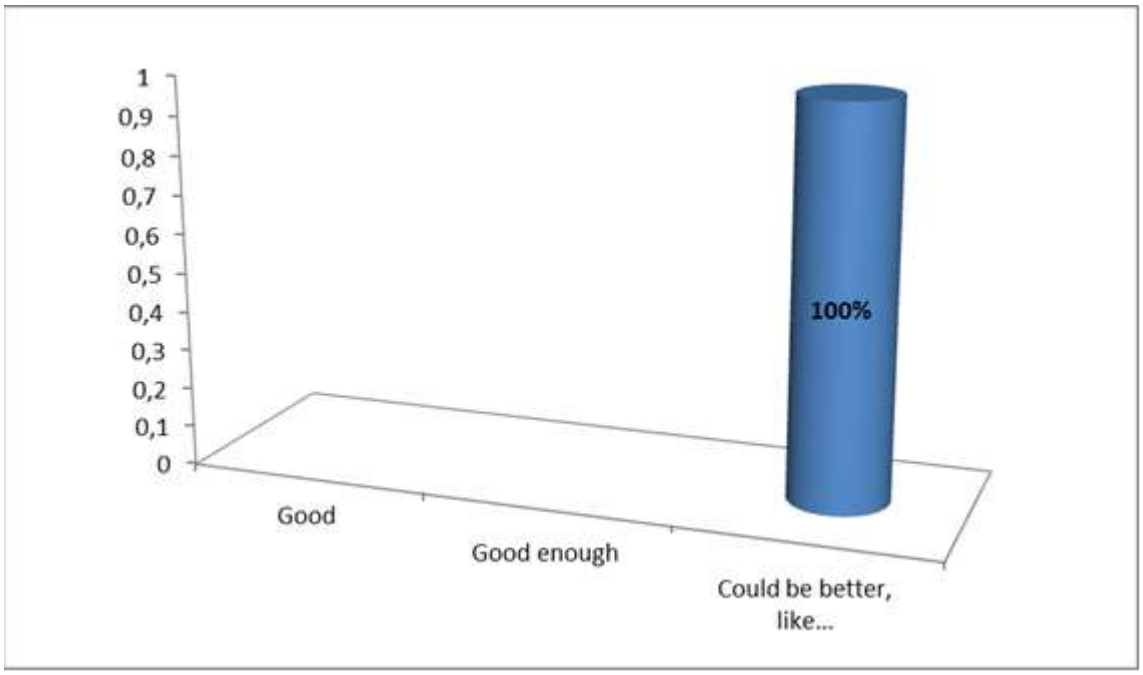

Figure 55-Screen: The font type is…

100% of seniors considered font type could be improved with nicer font type and bigger. In terms of design it will be better to use always in the entire app the same font style.

2.9.3-Brightness of the screen is…

This question was designed only for mobile application tests.

2.9.4-The information on the sites are….

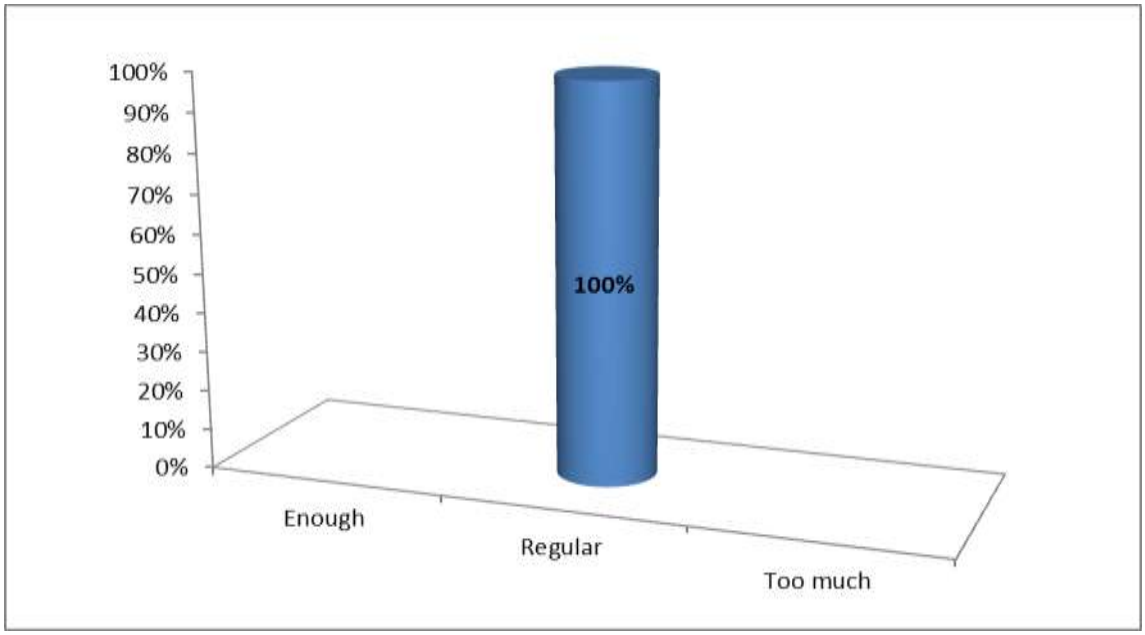

Figure 56-Screen: The information on the sites are…

In the map and route planner they considered the information showed could be improved with more information about POI's or public transport.

2.10- POI's (mobile)

This question was designed by mobile application tests there aren't available POI's in web application.

2.11-Suggestions

- To change the registration procedure by sms for example.
- Seniors recommended in route planner include a "clear button" after or below departure/ destination text table. Only appear "clear button" below intermediate point table text (2 buttons in Spanish and in English).
- They considered that colors in the maps could be improved with more colors, not only grey.
- Relating the size of font in the map seniors considered the departure/destination and intermediate icons could be bigger and to increase the zoom in the map. In the last case they commented zoom could have more capacity to apply the route and to see with more clarity the streets names and localization of route points.
- The arrows and the font size must be bigger in route planner.

- In overall to uniform the font style in web application.

4. Conclusions

- Problems with registration procedure.
- They didn't like to see the English text when they enter in the map, it is necessary to click in the respective flag.
- They commented it is quick entering in the web application.
- Seniors considered very useful "change departure-destination button"
- They considered very interesting the block user profile and easy to manage it.
- They commented the letters, images and icons are small.
- They considered the web application could be better in terms of font and colors.
- Seniors had problems to find some Badajoz streets and they saw that some streets were in wrong Badajoz zones. Didn't appear the number of street in departure/ destination/intermediate text tables.

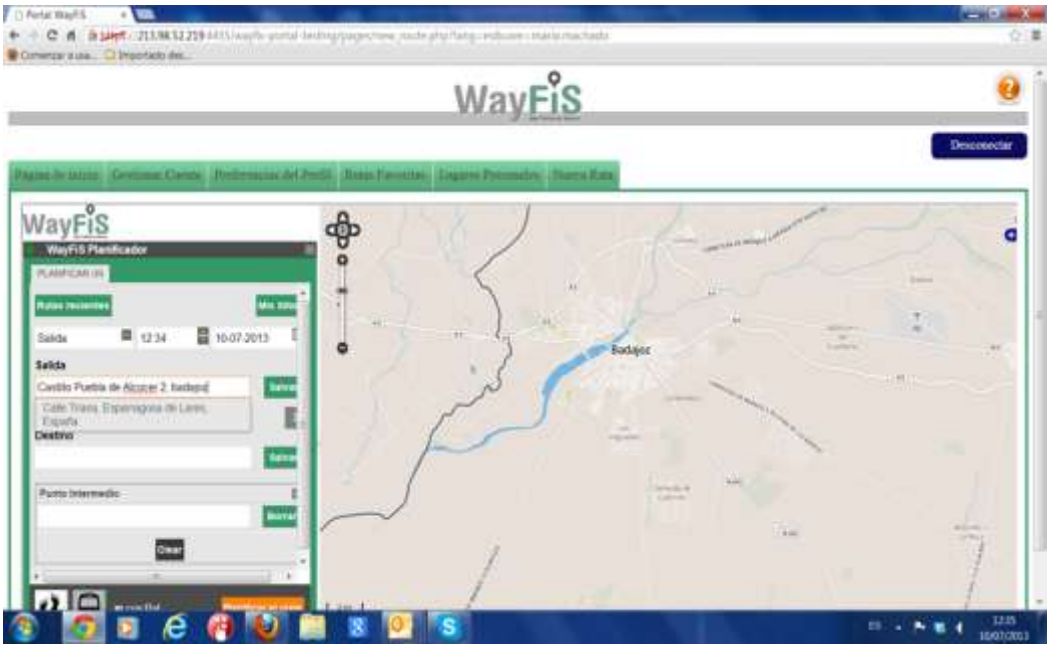

Image 11-Example of Street didn't find

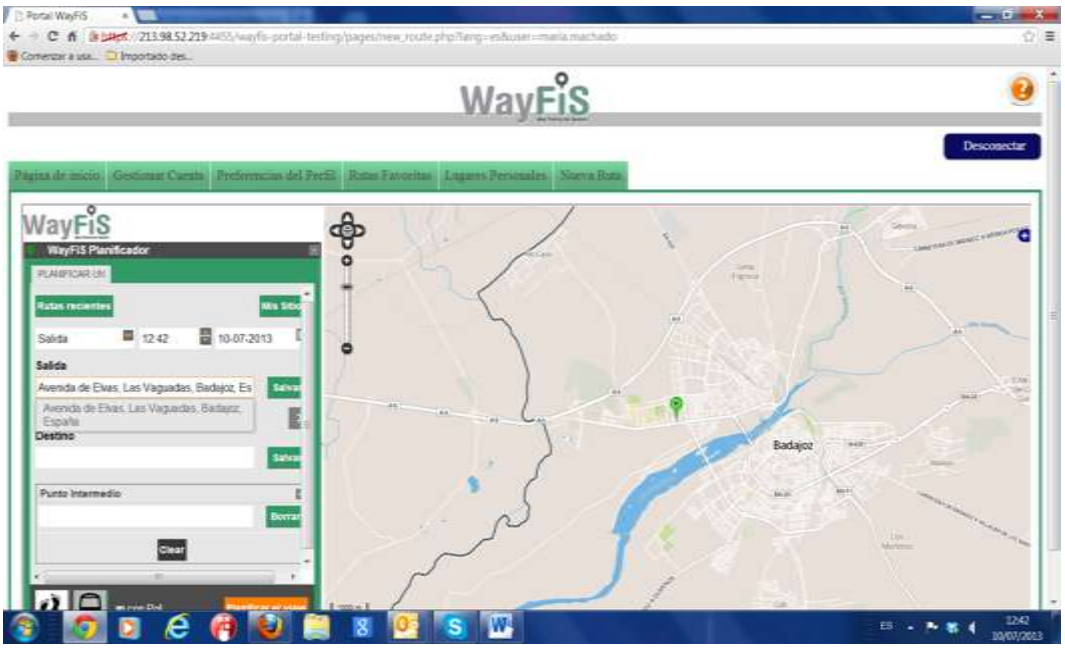

Image 12-Example of wrong Badajoz zone

- In terms of image it will be better if all the content of planner route and map could be seen without move the scrolls.

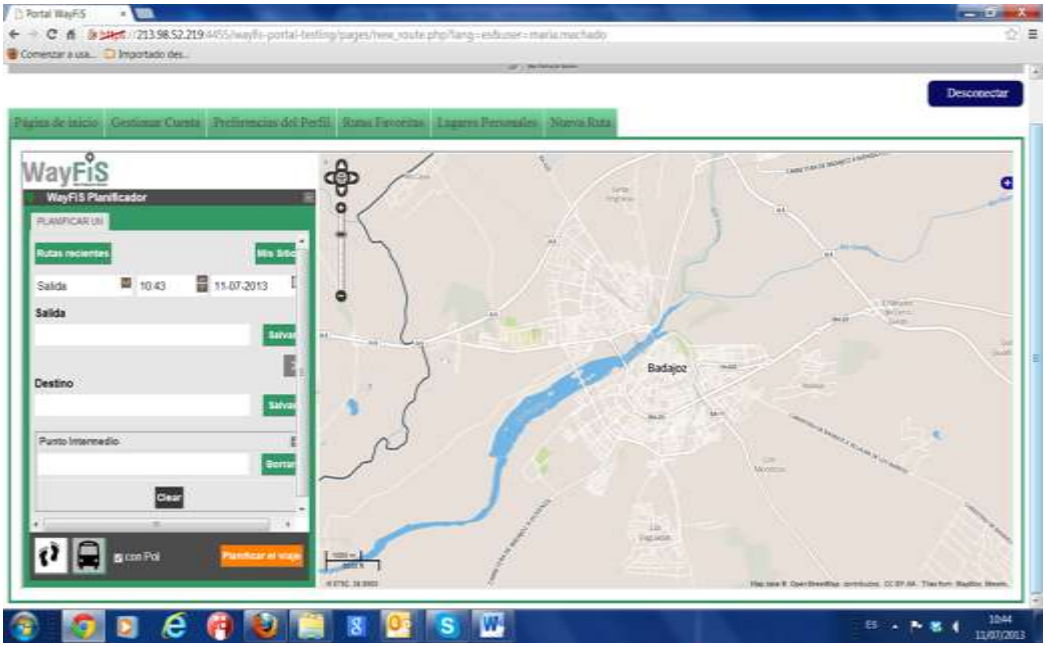

Image 13-Example of how Wayfis web application appears in the computer screen

- In some cases when seniors included intermediate point appeared the following message in English:

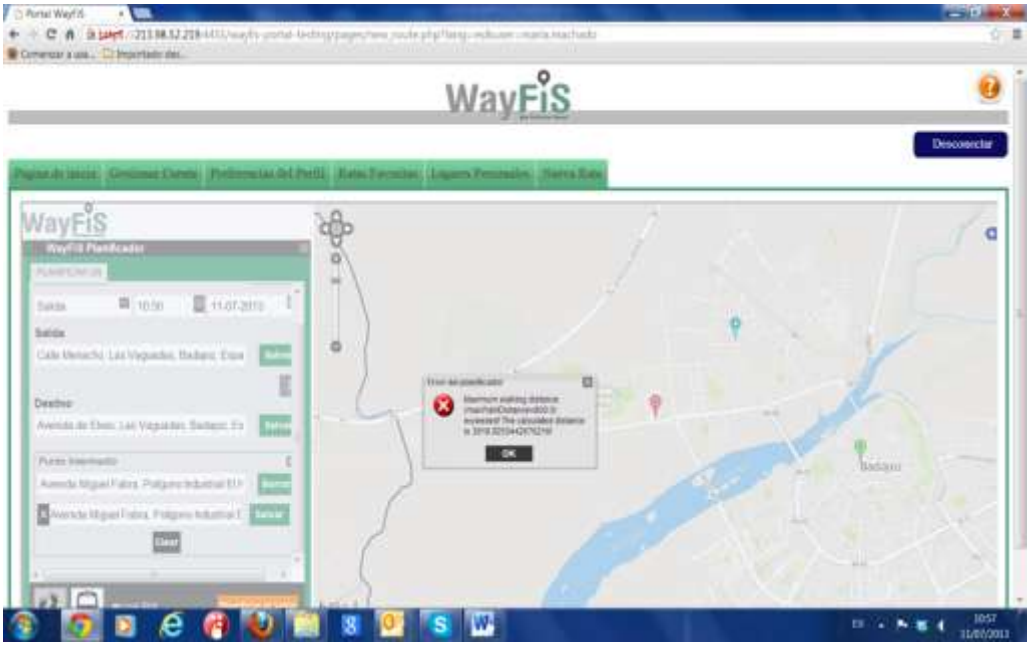

Image 14-Example of error when was included an intermediate point

- Sometimes the indication text appeared in English as well the message errors.

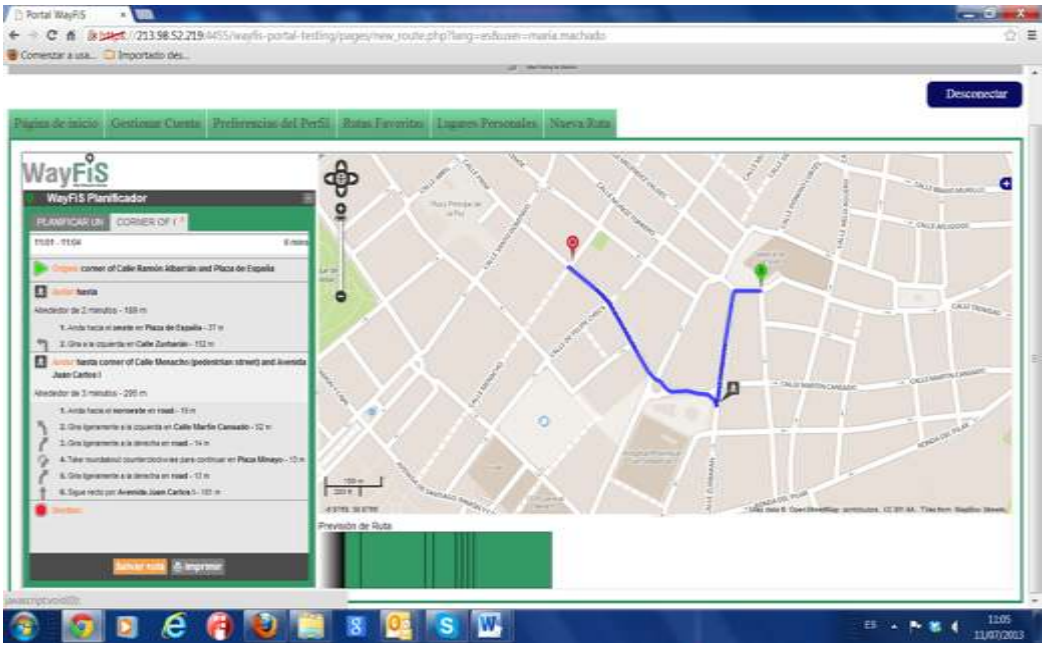

Image 15-Example of indications in English in planner route

- In departure/destination/intermediate text table they commented they need to fill the full address in order to appear the correct one. Sometimes appeared streets from others cities and countries.

"This project has been funded under the third AAL call, AAL-2010-3. This publication [communication] reflects the views only of the author, and the Commission cannot be held responsible for any use which may be made of the information contained therein"

PROJECT Nº: AAL-2010-3- 014

Mobility Test Results (1st Phase) Spain

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1. Mobility tests-Spain Results

The mobility tests results were developed by CETIEX in collaboration with elderly home care-Puente Real located in Badajoz. The tests took place from 16th June till 1stJuly and participated 20 seniors with age between 66 and 89 years old. The 50 tests were developed along several days in different Badajoz zones. Initially CETIEX give a brief explanation about WayFiS mobile application and its functionalities and after that seniors begin to introduce their profile, planned the route and realize the route outside. In order to develop the mobility tests it was used the WayFiS mobile application V7, and 5 smart phones with android system: 3 Samsung Galaxy SIII Mini and 2 Samsung Galaxy SCL i9003.

Image 16-Wayfis Mobility Tests (Spain)

Image 17-Wayfis Mobility Tests (Spain)

Image 18-Wayfis Mobility Tests (Spain)

Image 19-Wayfis Mobility Tests (Spain)

Image 20-Wayfis Mobility Tests (Spain)

TRAVEL QUESTIONNAIRE	
Date	
Name	
Age	
Gender	☐ Male 36% ☐ Female 64%
Level of education	☐ No education/primary school 24% ☐ Secondary school 32% ☐ College (diploma) 26% ☐ University 18%
Currentemployment status	☐ Free lancer ☐ Employee 2% ☐ Civil servant 6% ☐ Labourer ☐ Housewife/-man 22% ☐ Retired 77% ☐ other_____
Travel date	
Travel start time	
Origin	
Destination	
Reason for travel	
Transport used	☐ Walking 100% ☐ Bus ☐ Train ☐ Underground ☐ Tram ☐ Others….
Travel with:	☐ Alone 4% ☐ Other Relatives 10% ☐ Spouse or partner 8% ☐ Some friends 76% ☐ Formal/Informal caregiver ☐ Others 2%
Turn on the application	Time to switch on ☐ 1secons-10 seconds 36%

	10- 20 seconds	64%
	20 – 30 seconds	
	More than 30 seconds	
Finding a departure, intermediate, destination point in the system	Finding the actual position with the button	
	Exactly	58%
	In the 5-10 meters	26%
	More than 10 meters	6%
	Finding the departure point by writing	
	Exactly	60%
	In the 5-10 meters	34%
	More than 10 meters	6%
	Finding the departure point	
	Exactly	62%
	In the 5-10 meters	34%
	More than 10 meters	4%
	Finding the intermediate point	
	Exactly	18%
	In the 5-10 meters	22%
	More than 10 meters	6%
	No applicable	54%
	Finding the destination point	
	Exactly	62%
	In the 5-10 meters	34%
	More than 10 meters	4%
	Accuracy regarding the departure, destination	
	Exactly	56%
	In the 5-10 meters	42%

	☐ More than 10 meters	2%
	Speed in founding the points	
	☐ 1secons-10 seconds	66%
	☐ 10- 20 seconds	34%
	☐ 20 – 30 seconds	
	☐ More than 30 seconds	
The planned route	The route planned by the app is understandable:	
	☐ Totally	96%
	☐ Mostly	4%
	☐ It could be better, like …..	
	The offered transports were correct	
	☐ Totally	
	☐ Mostly	
	☐ Not at all	
	The time showed for the linked transport were correct	
	☐ Totally	
	☐ Mostly	
	☐ Not at all	
	The appeared commands during the route are….	
	☐ Helpful, understandable…	78%
	☐ Regular	22%
	☐ Bad	
	Changing between routes is	
	☐ Clearly	6%
	☐ Regular	10%

	Bad	32%
	New route not found	52%
	Images and letters during the route are…	
	Big enough	100%
	Medium	
	Small	
	Speed changing between routes is	
	1secons-10 seconds	2%
	10- 20 seconds	6%
	20 – 30 seconds	
	More than 30 seconds	38%
	New route not found	54%
Screen	Brightness of the screen is…	
	Enough	10%
	Regular	46%
	Bad	44%
POI's	POI's simbology is understable…?	
	Clearly	52%
	Regular	42%
	Bad	
	No POI's available	6%
	During your trip your profile settings and the POI's showed to you…?	
	Match exactly	52%
	Just a few match	42%
	It doesn't match at all	6%

	POI's s Showed during your trip are…?	
	Enough	40%
	Toomuch	54%
	Few	6%
Routes	If you want to change the route to do it is….?	
	Easy	78%
	Regular	8%
	Difficult	14%
	If you choose the wrong path, the time it takes to tell you is...?	
	1secons-10seconds	
	10- 20 seconds	8%
	20 – 30 seconds	2%
	More than 30 seconds	38%
	New route not found	52%
Accessibility	In case you make use of a specific route because a mobility aid ...?	
	Is optimal	26%
	Regular	32%
	It doesn't show any different	42%
Suggestions	Please feel free to share your opinion about the route planner	

Table 7-Wayfis Usability Tests Results

1.1-Gender

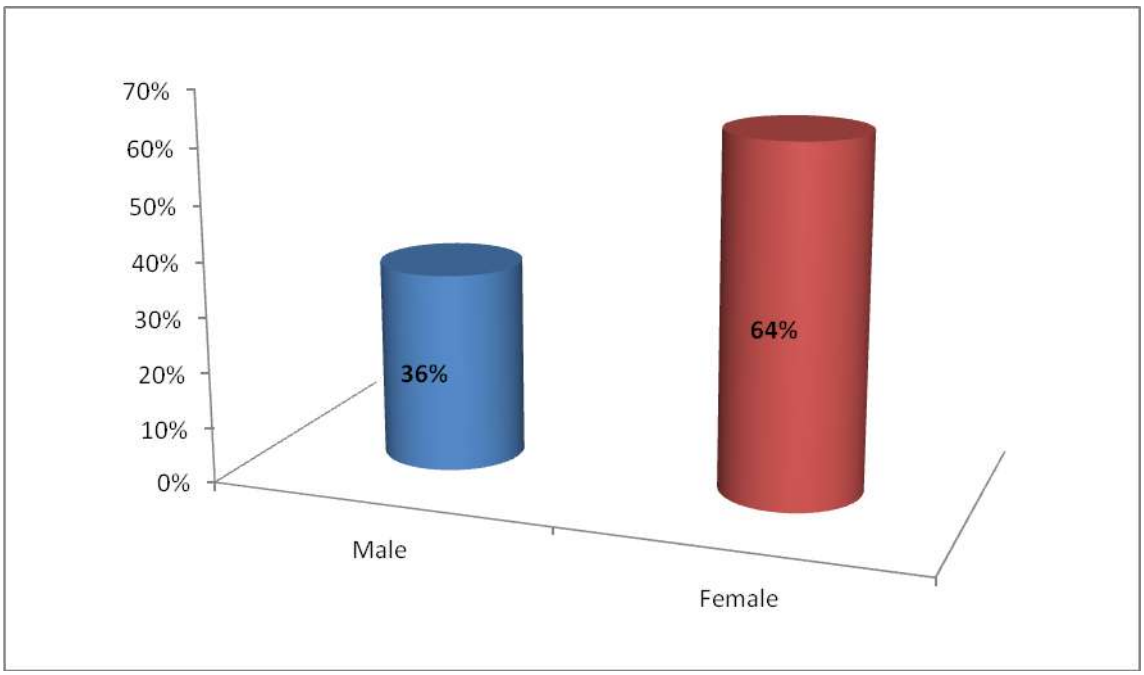

Figure 57-Gender

Concerning the gender of seniors tested 64% were women and 33% were men.

1.2-Level of Education

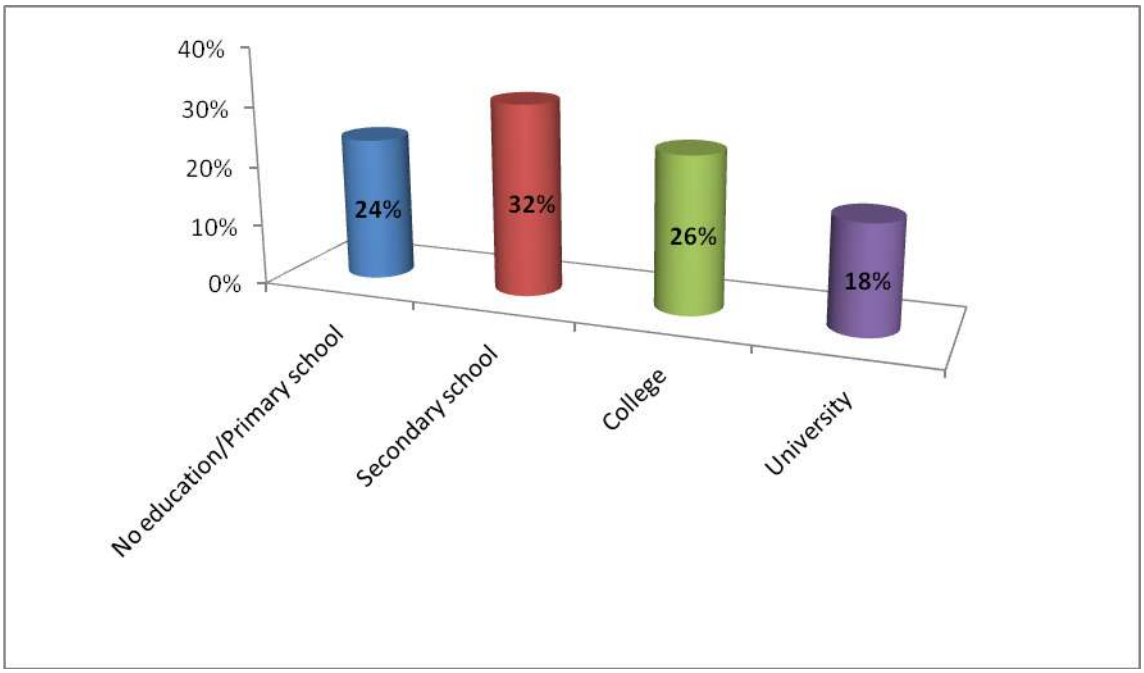

Figure 58-Level of education

Concerning level of education the seniors are divided by different levels of education in concrete: the most part 32% were seniors with secondary school, followed by 26% college, 24% no education/ primary school and 18% university.

1.3-Current employment status

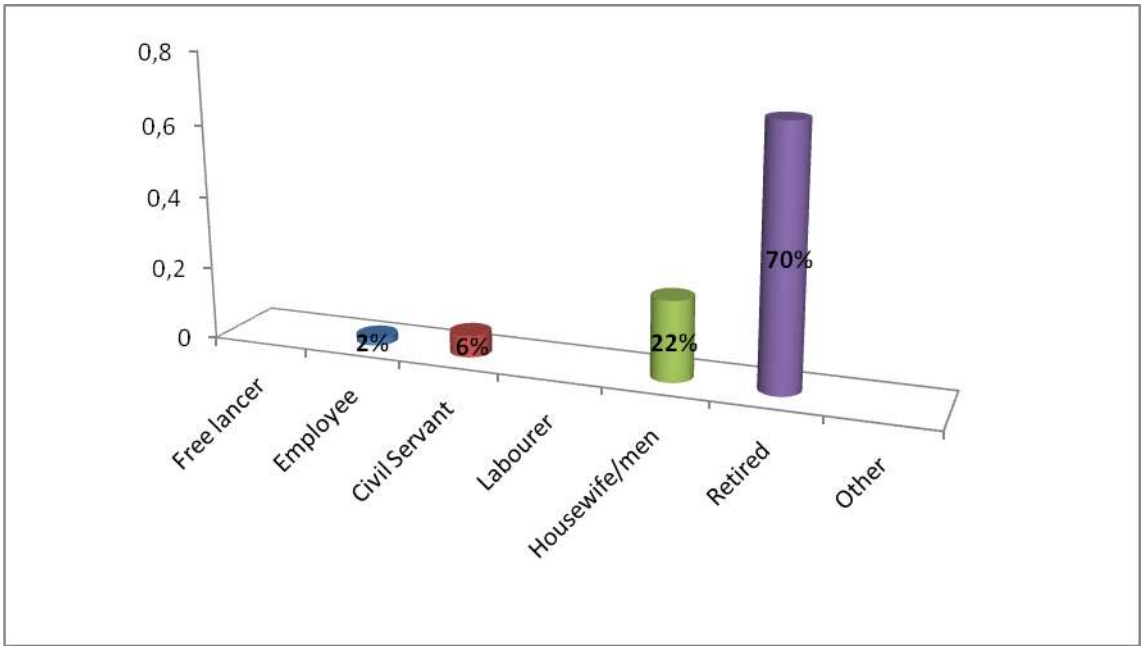

Figure 59-Current employment status

The most part of seniors tested 70% were retired followed by 22% of housewife/men, civil servant 6% and 2% employee.

1.4-Transport used

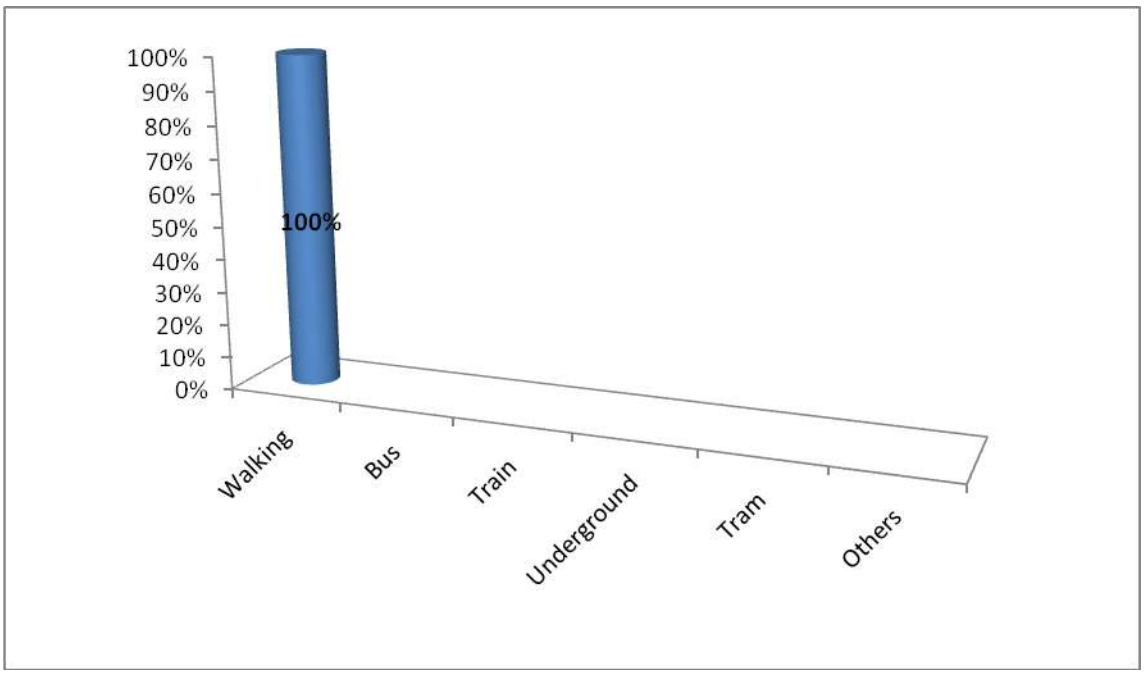

Figure 60–Transport used

In the mobility tests 100% of users were walking taking into account Public transport weren't available for Badajoz.

1.5-Travel used with..

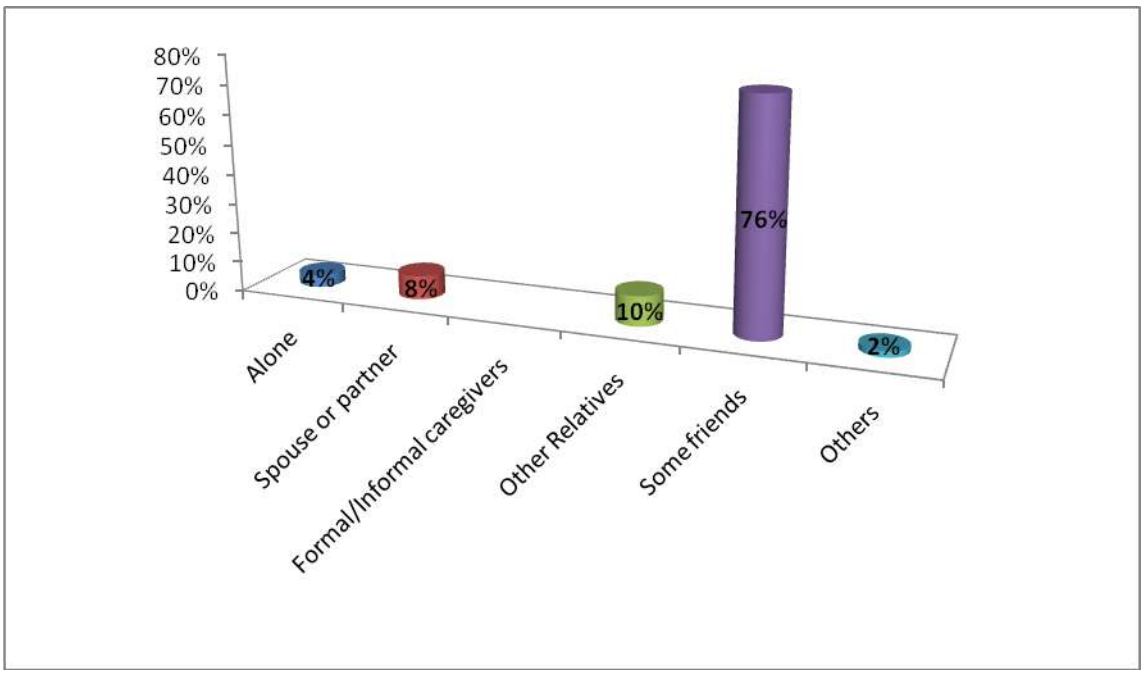

Figure 61-Travel with:..

When the seniors realized the tests 76% were accompanied by some friends, 10% by other relatives, 8% by spouse or partner, 4% alone and finally 2% in others cases.

1.6-Turn on the application: Time to switch on

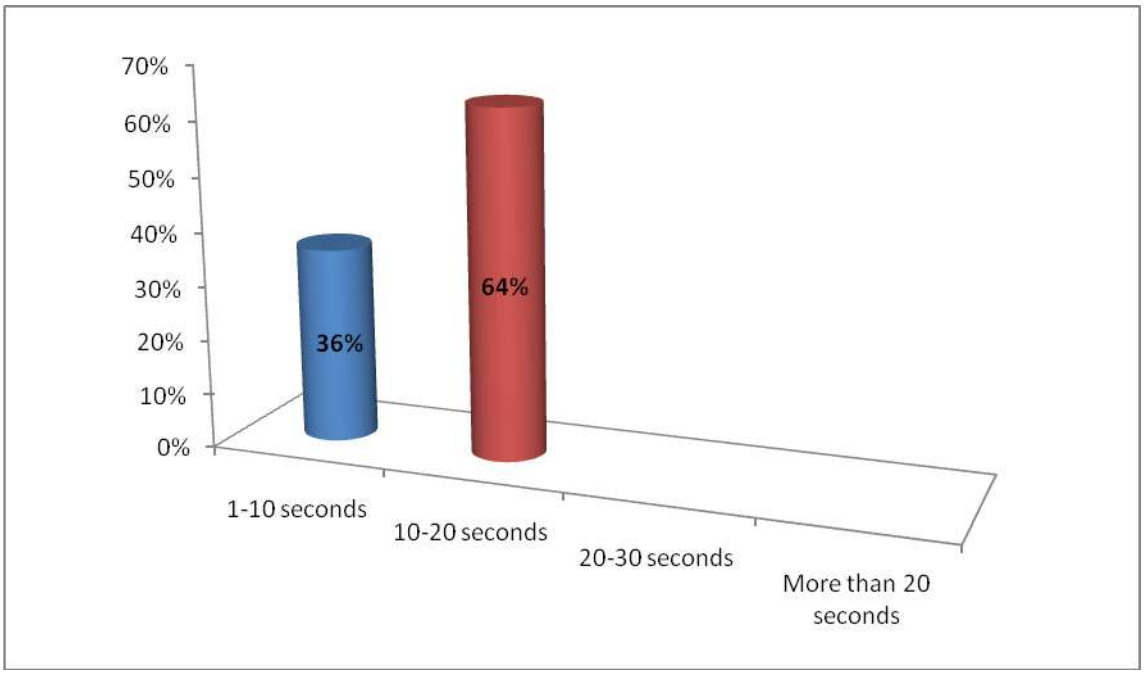

Figure 62-Turn on the application: Time to switch on..

Concerning the time to switch on the application they considered the procedure quick, 64% of users tested answered 10-20 seconds and 36% 1-10 seconds.

1.7-Find a departure, intermediate, destination point in the system

1.7.1-Finding the actual position with the button

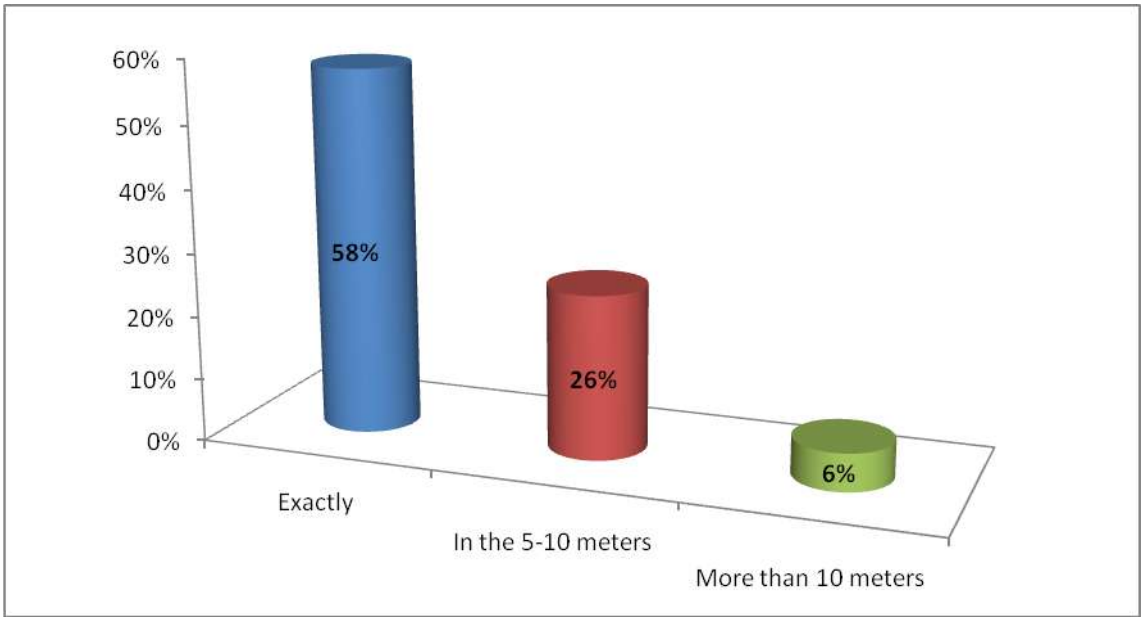

Figure 63-Find a departure, intermediate, destination point in the system: Finding the actual position with the button

To find a departure actual position with GPS button it was easy for the seniors (in spite their difficulties with touch screen). Concerning to finding the actual position 58% of them answered exactly, 26% between 5-10 meters and 6% more than 10 meters. It is important to mention that the correct position with GPS appeared at second and third search in some tests.

1.7.2-Finding the departure point by writing

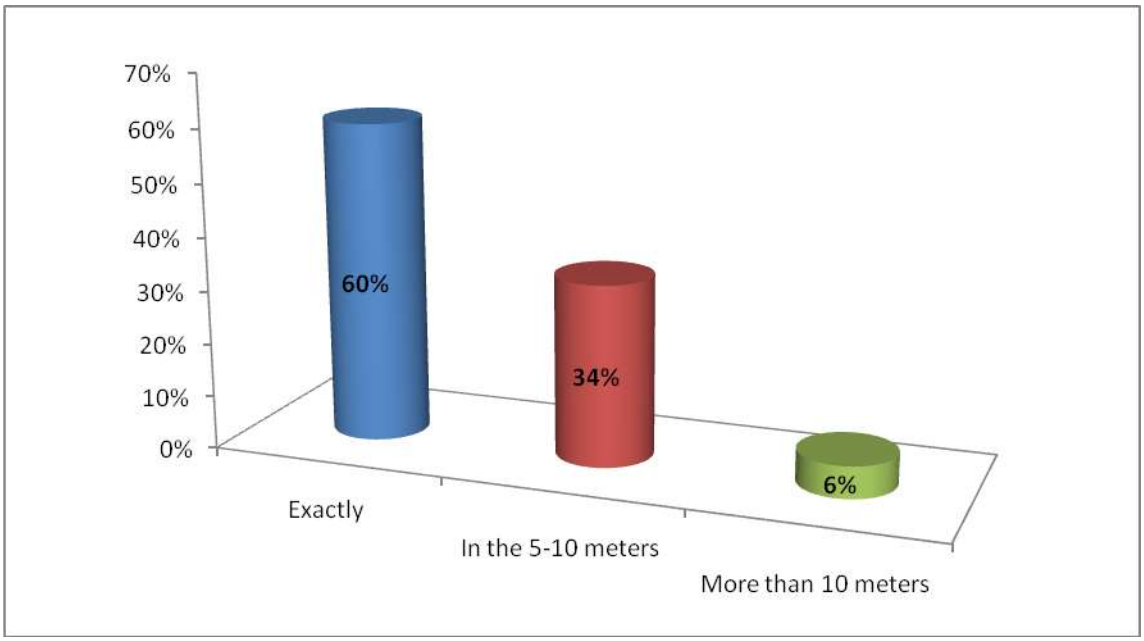

Figure 64-Find a departure, intermediate, destination point in the system: Finding the departure point by writing

In this case when seniors had to write the departure address they commented it is complicated. They have some problems with touch screen, the font size it is small, they can't see all the information in departure text table. When seniors finally included the departure address the different options (addresses) that appeared they can't read the full content in text table in order to select the correct one (see images in conclusions).After this step 60% of seniors answered the application finding a departure point exactly, 34% in 5-10 meters and 6% more than 10 meters.

1.7.3-Finding the departure point

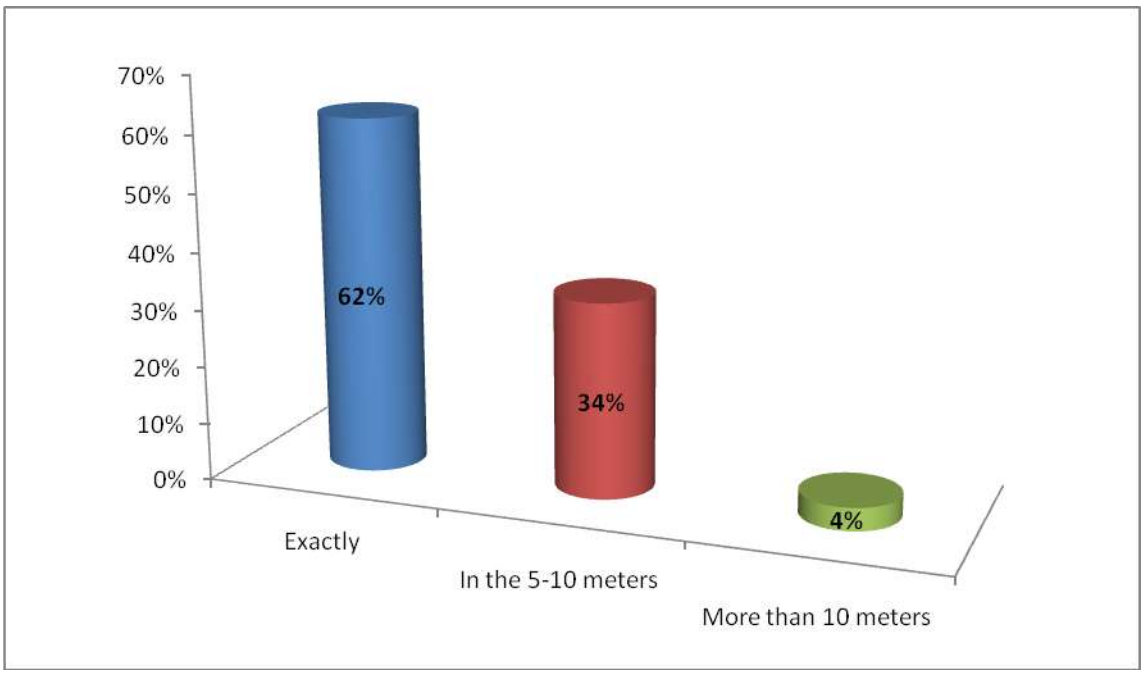

Figure 65-Find a departure, intermediate, destination point in the system: Finding the departure point

In this case to find the departure point in overall WayFiS application in map 62% of seniors answered exactly, 34% in the 5-10 meters and 4% more than 10 meters, when they wrote the address or click the departure point in the map.

1.7.4-Finding the intermediate point

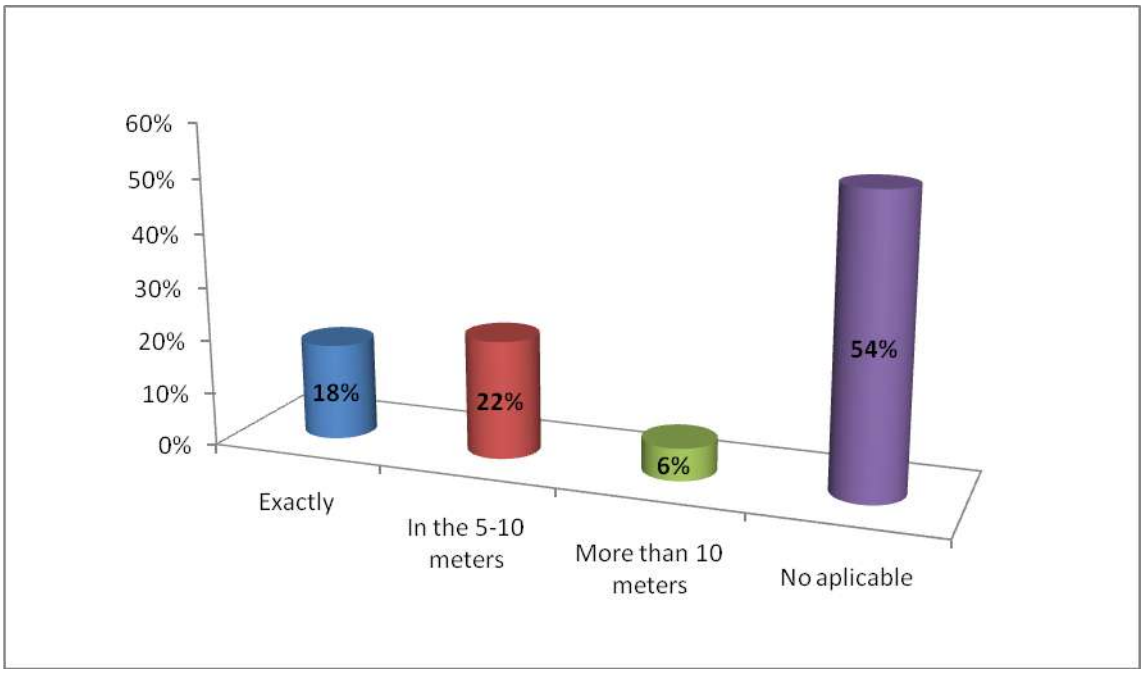

Figure 66-Find a departure, intermediate, destination point in the system: Finding the intermediate point

When the mobility tests were done 54% of users tested didn't include an intermediate point. In the rest of tests with intermediate point 22% answered application found it in 5-10 meters, 18% exactly and 6% more than 10 meters. In the most part of the cases when seniors began the planned route with intermediate point included they had problems with server or the WayFiS application, the route blocked.

1.7.5-Finding the destination point

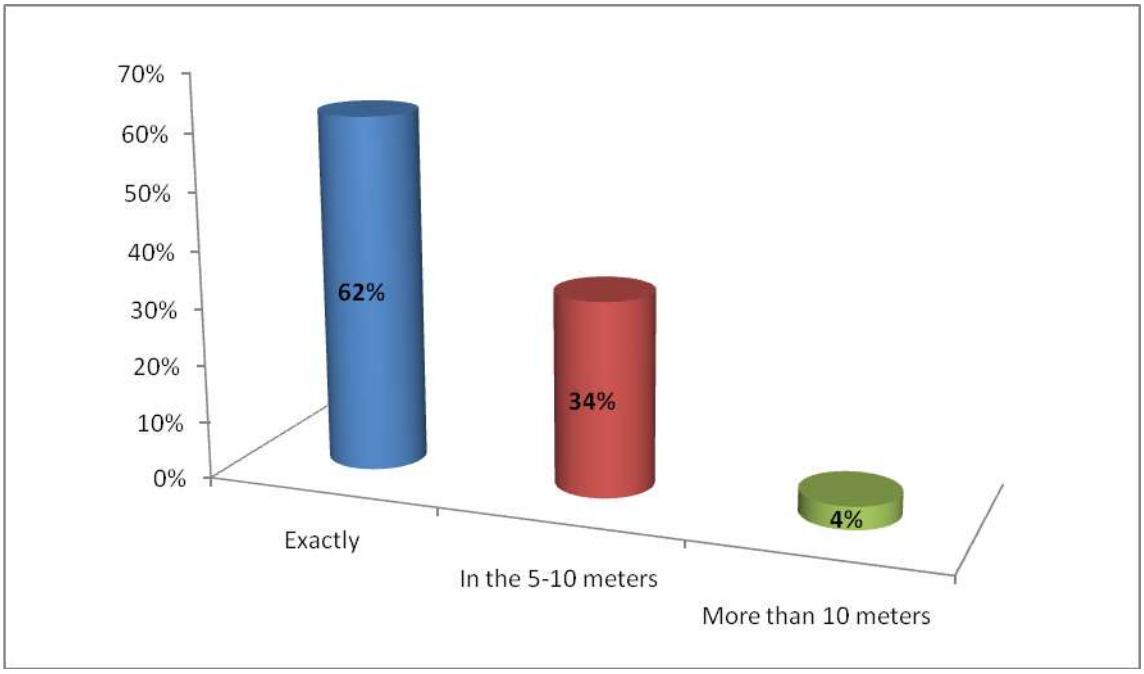

Figure 67-Find a departure, intermediate, destination point in the system: Finding the destination point

In this case 62% of seniors answered WayFiS application finding a destination point exactly, 34% in the 5-10 meters and 4% more than 10 meters, when they wrote the address or click the destination point in the map.

1.7.6-Accurancy regarding the departure, destination

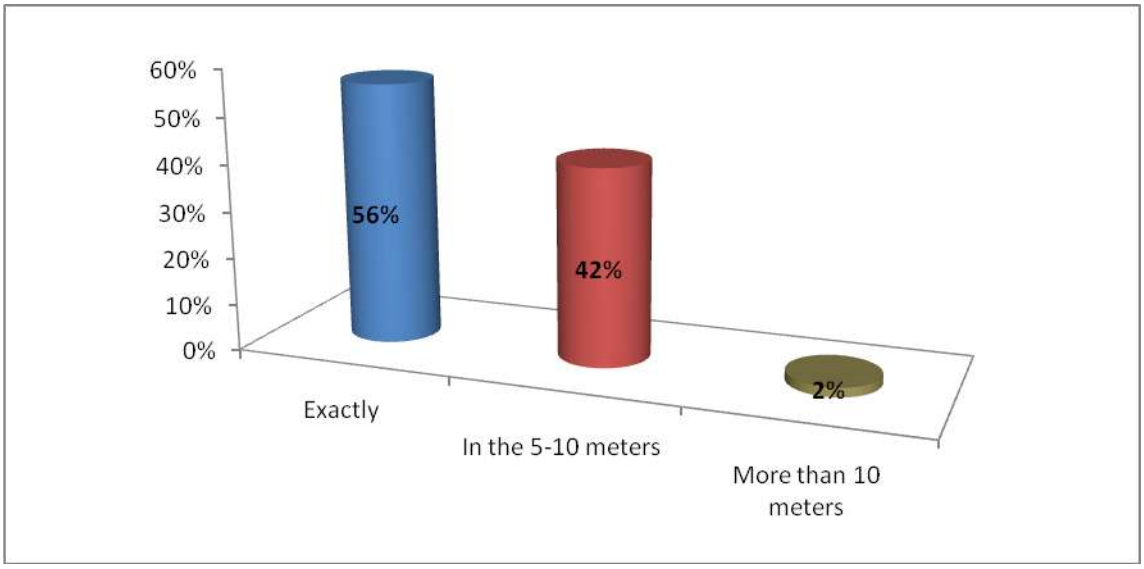

Figure 68-Find a departure, intermediate, destination point in the system: Accuracy regarding the departure, destination

Relating accuracy regarding the departure and destination reflected in the map 56% of seniors tested answered exactly, 42% answered in 5-10 meters and 2% more than 10 meters.

1.7.7-Speed in found the points

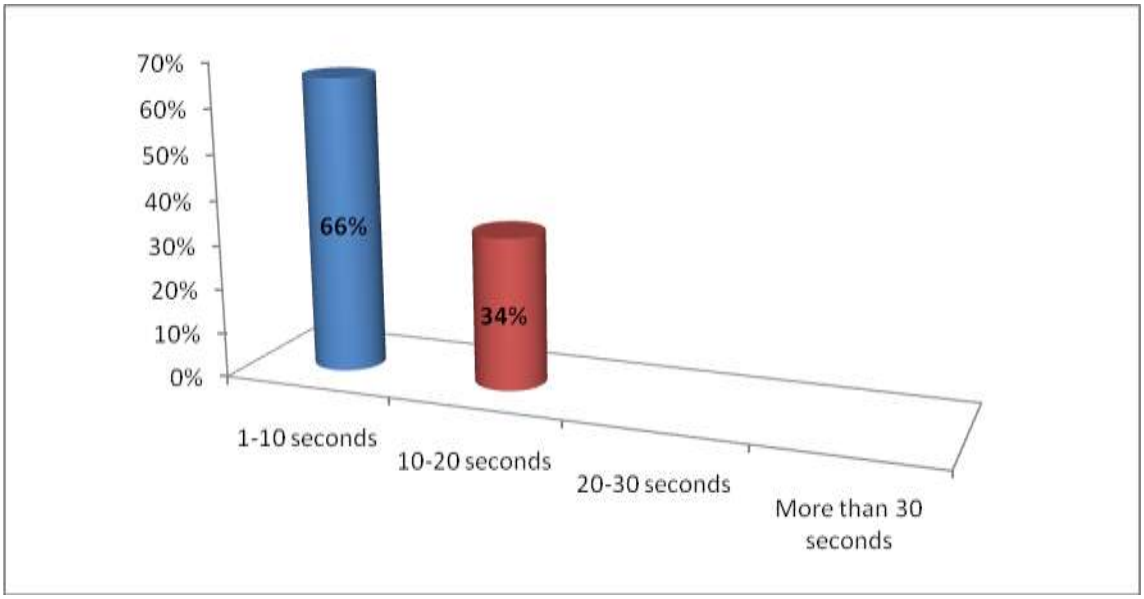

Figure 69-Find a departure, intermediate, destination point in the system: Speed in founding the points

Seniors tested are agreed WayFiS app is quick to found the departure and destination points, 66% answered between 1-10 seconds and 34% between 10-20 seconds.

1.8-The planned route

1.8.1-The route planned by the app is understandable..

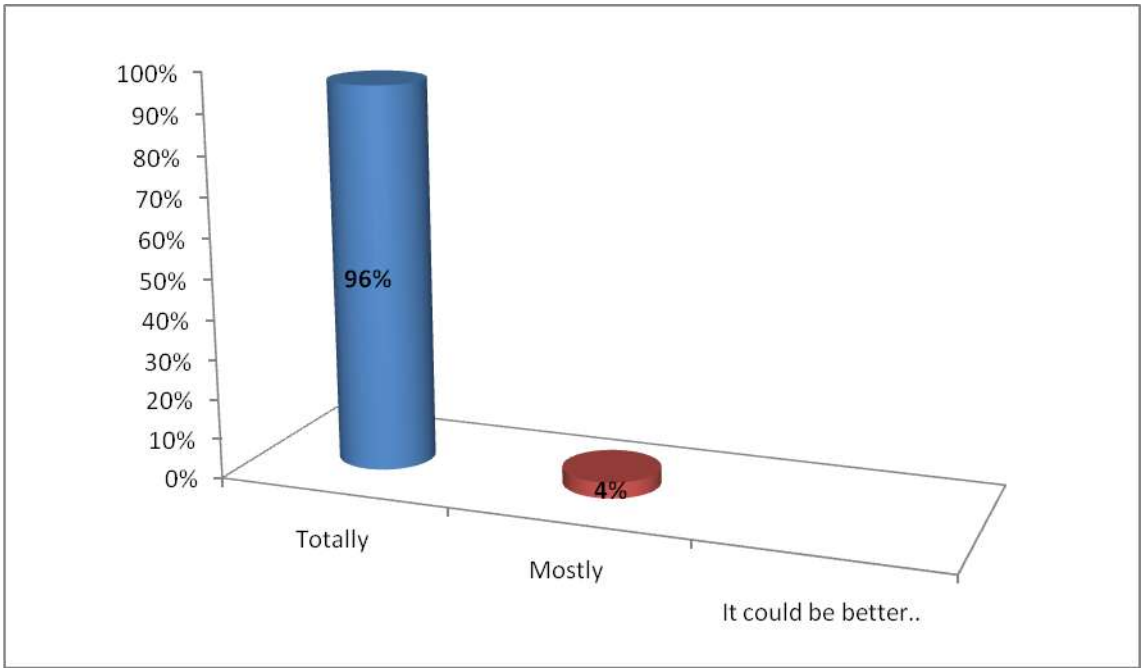

Figure 70- The planned route: The route planned by the app is understandable..

When app planned a route in the map 96% of seniors answered it is totally understandable because it is possible to open the zoom in this step and see the name of the streets and exact situation of departure and destination points and 4%mostly understandable.

1.8.2-The offered transport were correct..

This question wasn't answered because Badajoz public transport weren't available in the app.

1.8.3-The time showed for the linked transport were correct..

This question wasn't answered because Badajoz public transport weren't available in the app.

1.8.4-The appeared commands during the route are…

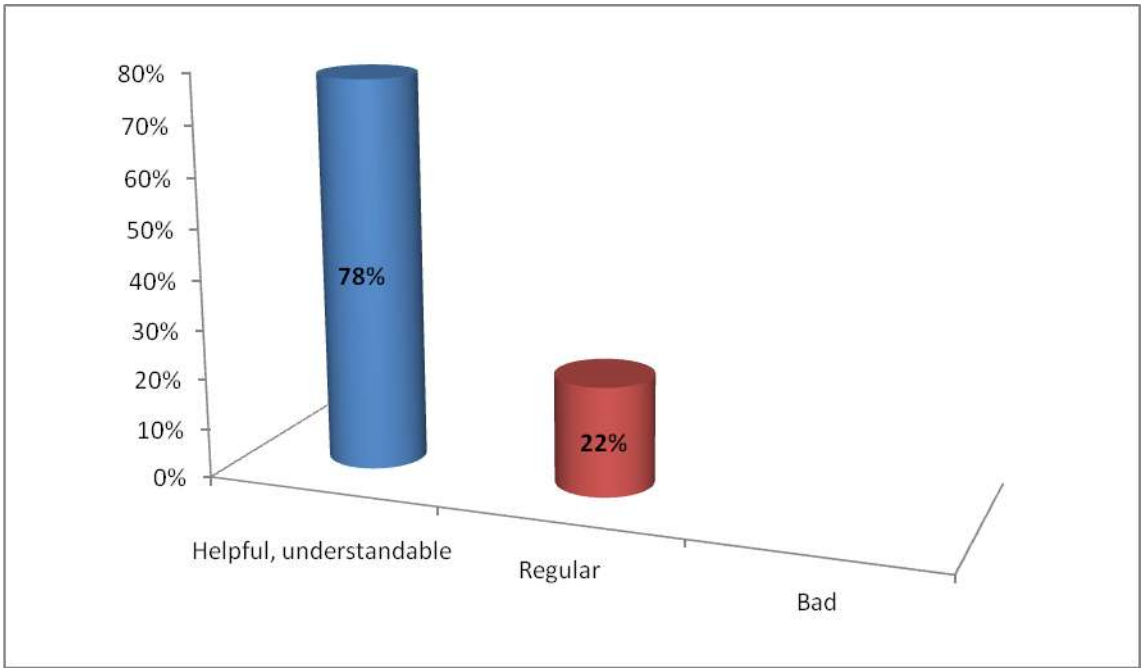

Figure 71-The planned route: The appeared commands during the route are…

Concerning the commands that appear in the route 76% considered helpful and understandable and 22% regular. They commented the message table to programme the route and the table with information of the route (select a itinerary: Duration, time walking...) could be bigger.

1.8.5-Changing between route is..

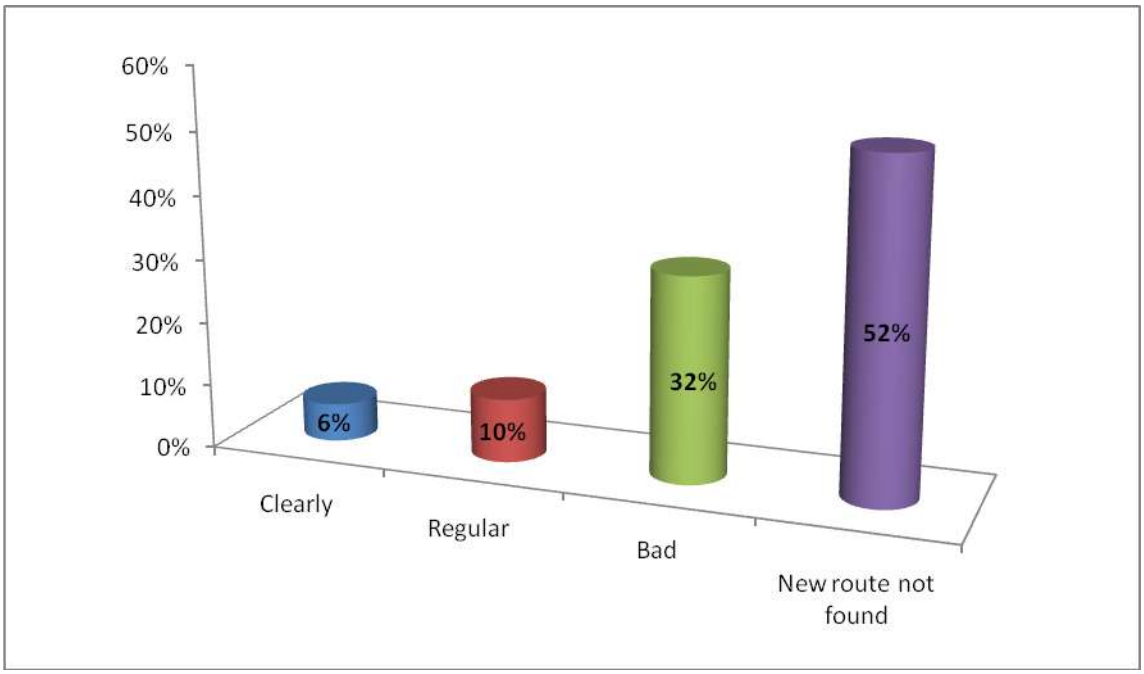

Figure 72-The planned route: Changing between routes is…

In the totality of mobility tests it was tested a change between routes, in this case it is important to mentioned 52% of seniors commented a new route was not found (it was included this column in the graphic) 32% answered bad, 10% regular and 6% clearly. The last one answered clearly thinking in the text table that appeared asking if you want to change the route. In the most part of the cases weren't recalculated the routes and when it happened it was after 4th or 5th times**.**

1.8.6-Images and letters during the route are…

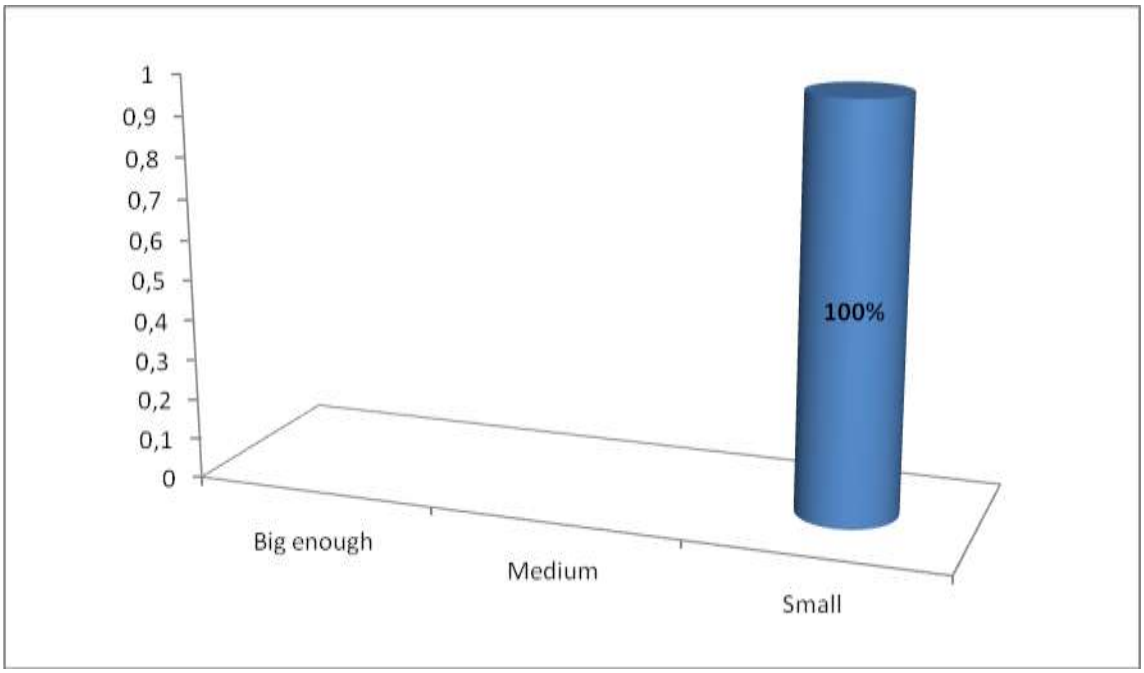

Figure 73-The planned route: Images and letters during the route are..

In this case all seniors tested are agreed font size and images must be bigger.

1.8.7-Speed changing between route is..

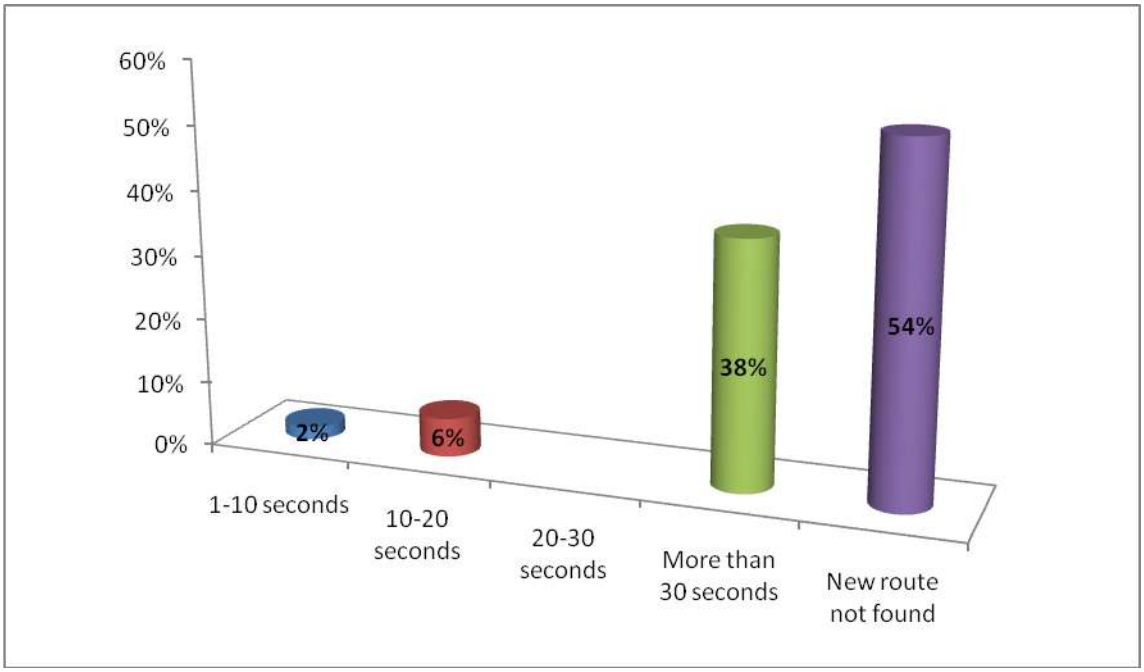

Figure 74-The planned route: Speed changing between route is..

In this case as was explained in 1.8.5 point in the most part of the cases WayFiS app didn't calculate the new route. 54% of seniors tested answered new route not found, 38% answered more than 30 seconds, 6% answered 10-20 seconds and 2% 1-10 seconds. In the last case they were thinking in table text that asked you if you want to change the route, no in time or recalculation process.

1.9-Screen

1.9.1-Brightness of screen is…

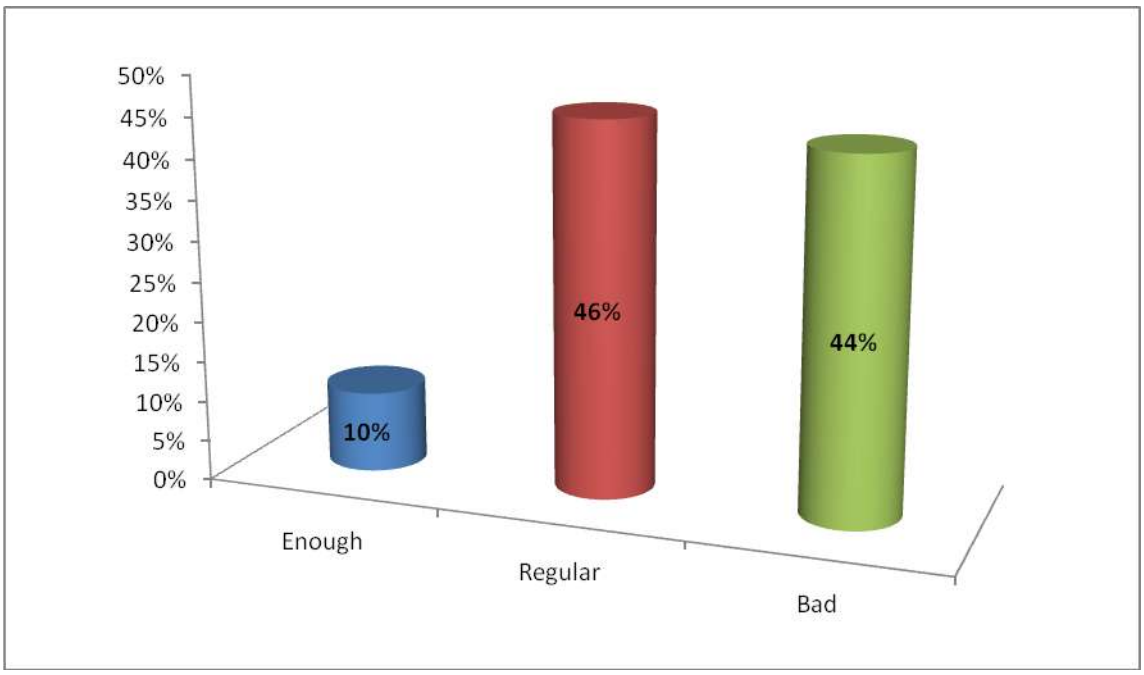

Figure 75- Screen: Brightness of screen is..

Concerning the brightness of screen 46% answered regular, 44% answered bad and only 10% enough. They had difficult to see the screen with the sun.

1.10-POI's

1.10.1-POI's simbology is understandable

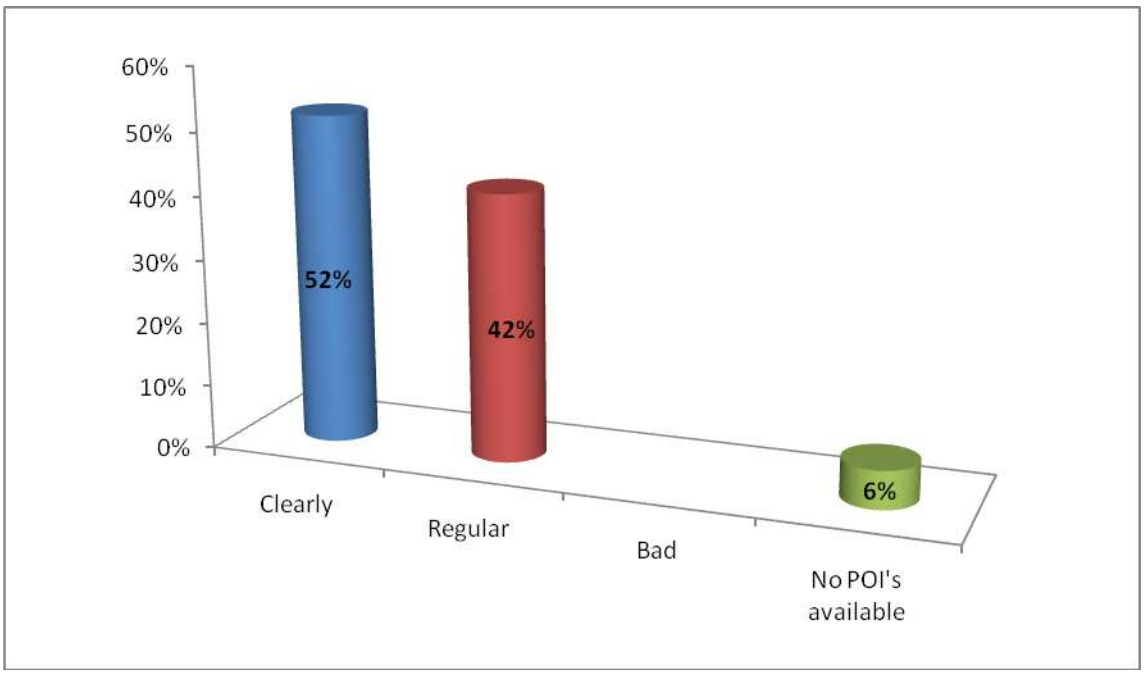

Figure 76- POI's: POI's simbology is understandable

52% of seniors considered POI's icons clearly understandable, 42% regular and 6% answered there weren't POI's available. They considered the introduction of POI's in the application very useful for their trips.

1.10.2-During your trip your profile settings and the POI's showed to you…?

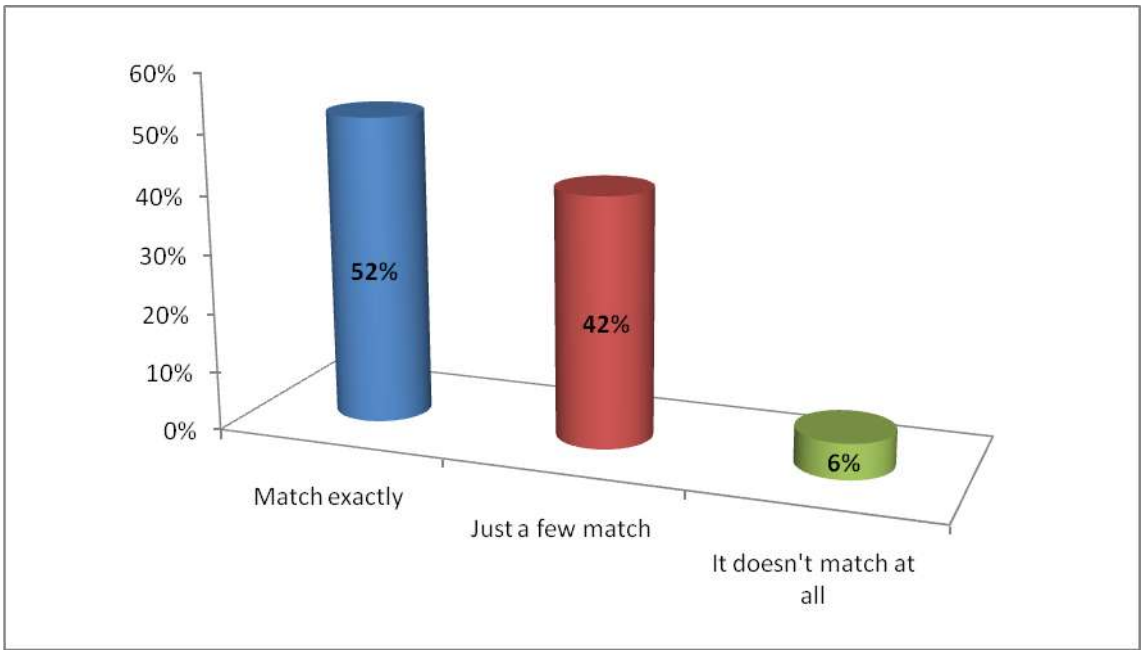

Figure 77- POI's: During your trip your profile setting and the POI's showed to you…?

52% of seniors tested commented POI's showed match exactly with their profile, 42% commented just a few match and 6% it doesn't match at all.

1.10.3-POI's showed during your trip are..?

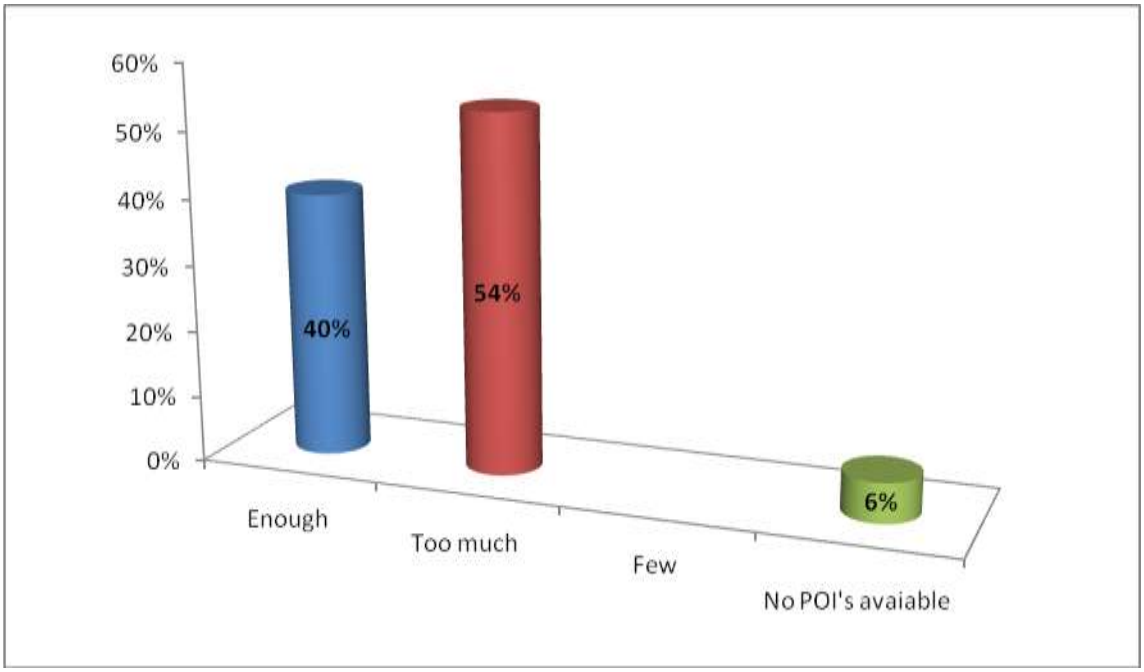

Figure 78-POI's: POI's showed your trip are..

Concerning the amount of POI's showed during the trip 54% commented they are too much, 40% commented they are enough and 6% said there aren't POI's available along the trip.

1.11-Routes

1.11.1-If you want to change the route to do it is…?

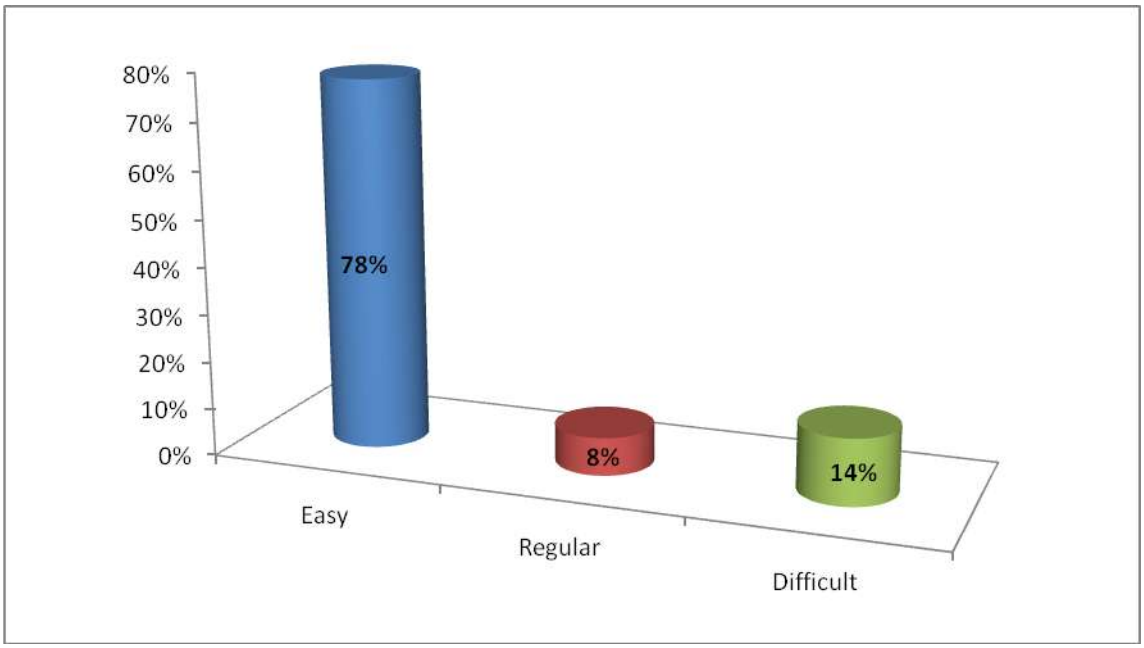

Figure 79-Routes-If you want to change the route to do it is….?

As was explained in 1.8.5 point (Changing between route is..,) 78% of seniors tested considered easy, 14% difficult and 8% regular to change the route when the text table that appeared asking if you want to change the route. But in fact the application had several problems to recalculate the route mentioned before.

1.11.2-If you choose the wrong path, the time it takes to tell you is….?

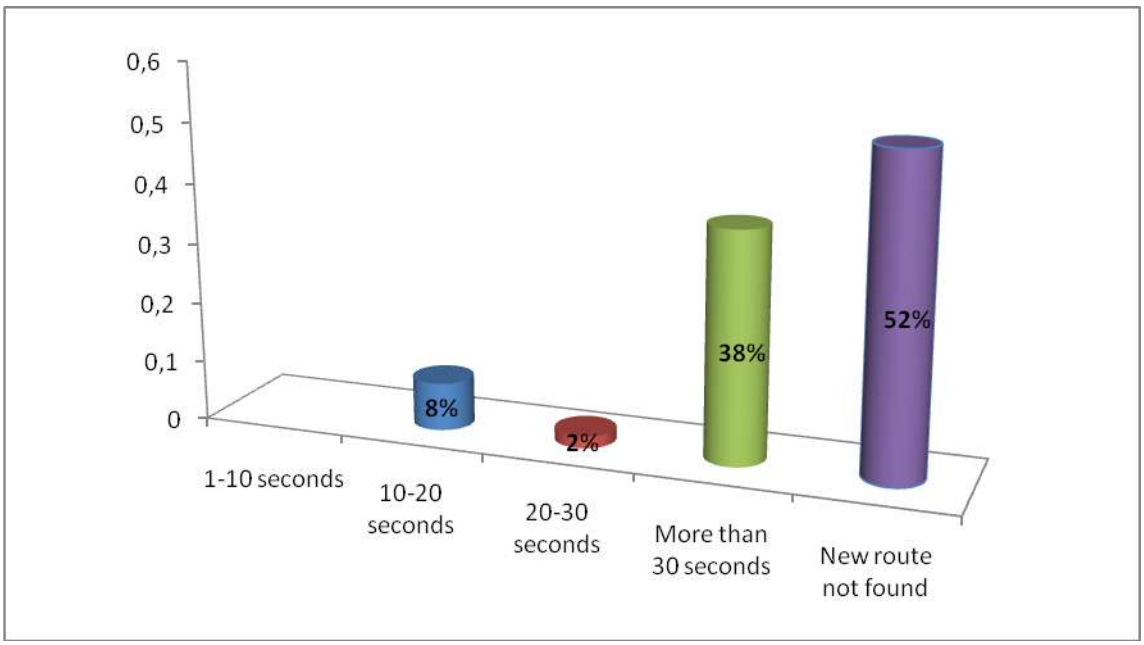

Figure 80- Routes: If you choose the wrong path, the time it takes to tell you is….?

When seniors accepted to change the initial route planned 52% of the cases the route wasn't found, and in cases the route was found (after say accept the new route 4th or 5th times) 38% commented more than 30 seconds, 8% between 10-20 seconds and 2% between 20-30 seconds.

1.12-Accessibility

1.12.1-In case you make use of a specific route because mobility aid…

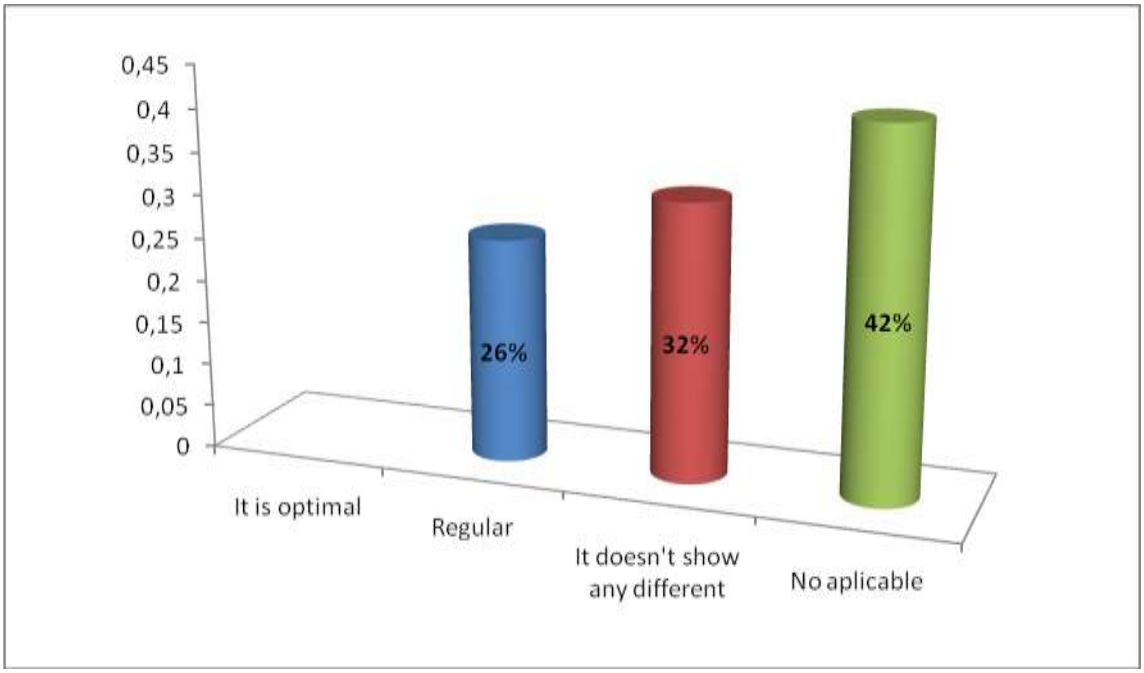

Figure 81-Accessibility.

Relating accessibility 42% of seniors didn't used mobility aid, 32% considered it didn't any different and 26% commented it was regular.

1.13-Sugestions

- Better server availability and functionality.
- To change registration procedure.
- Improve voice command functionality, it must be always present in the beginning/end of the route, as well in the direction change or when the users take a wrong way, sometimes disappeared in these cases.
- Seniors suggested the letters, images and POI's could be bigger. It was very difficult for the seniors to read the text including using their glasses.
- All the text relating the route along trip must be in Spanish, message texts and indications.
- To improve the efficiency and precision of the arrows and indications in above commands they functioning with a lot of errors.
- To improve the Badajoz maps with correct zones and streets.
- To include more POI's in Badajoz map.
- To improve the recalculation process, they give a lot of errors.
- Seniors suggested will be better if the zoom on the map will be available not only when the route is planned but also when the route beginning.
- Seniors recommend improving the data introduction in the departure/ destination table.
- To improve the concretion in meters in the above commands, the indication is different of route map. In all tests done there was a difference in meters in the above commands (between 10-20 meters) relating with correct point reflected in the map.

2. Conclusions:

- Continuous problems with server functioning.
- The application several times blocked when a route was in course and it was difficult to exit in order to enter and include a new route.
- Problems with GPS localization, sometimes it was difficult to find the exact point (departure or destination), seniors have to try several times.

- Continuous problems with voice command, sometimes didn't appear, others appeared in the beginning but not when seniors turned (left or right) in the route or when arrived in the destination point. Other situationit can be mentioned with voice command it was a mix of English and Spanish language or when voice command was blocked and repeat several times the same word or phrase.

- Several errors in above command in arrows (wrong indications), text in English, indications to change the route when seniors had the correct route.

Image 21-Indicate to change the route and senior goes by the correct way

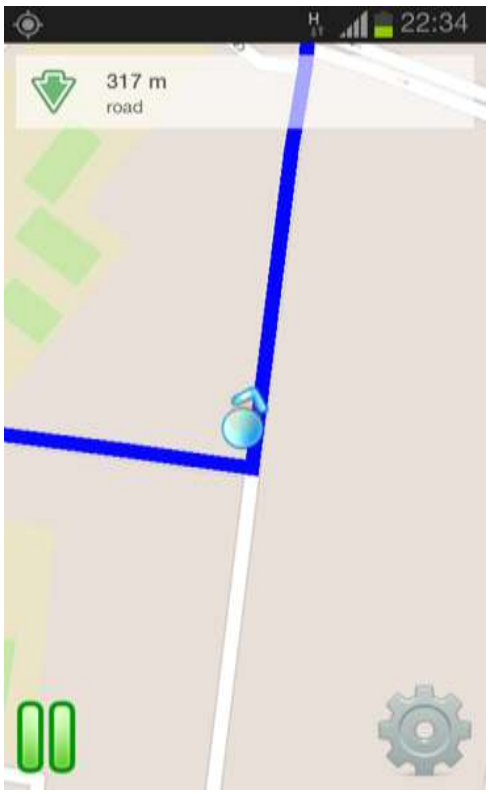

Image 22-Indication a wrong direction (back) and senior goes in the correct direction

- Sometimes the seniors were walking in the sidewalk and a little far way of the road, and application said they weren't in correct way. Seems the routes are planned taking account the road not the sidewalk.

Image 23-Another indication of wrong way in the sidewalk

- In many cases when the route was correct appeared a text message said you have the wrong way in the above commands and it was till the end of the route, but in the map and user point command were corrects.

- Sometimes the application didn't show the short route for seniors.

- Problems to find some Badajoz streets throughout GPS button and when seniors wrote the street name in text table. In some cases seniors introduce a Badajoz address for example: Avenidade Europa 5, Badajoz and appeared in Departure table text the same address from other small village that belongs Badajoz province. Several mistakes in Badajoz zones.

- Seniors had problems to write the departure and destination address, font size very small. They have to write the complete address to have the possibility to choose the correct street in the correct town and country. It is impossible to see all text content introduced. (see follow examples).

Image 24-Seniors can't read full text in the departure table text

Image 25-Seniors can't read full text in the departure table text

Image 26-It is impossible to read the full text in address options in order to select the correct one

- It was difficult for seniors to see mobile while they walked, difficult to see the screen and also to read the text especially in the above commands.

- When seniors include an address and they include the street number, then they had to select the correct option in the menu, the street appear without number.

Image 27-In the option menu and departure text table didn't appeared street number

- Some errors in the name of Badajoz zones. For example a route in the city center, *Plaza de España 1, Badajoz* inside departure or Destination table appears: *Plaza de España 1, Las Vaguadas, Badajoz.* Las vaguadas is a zone that belongs Badajoz but it is outside city center:

Image 28- Some mistakes in Badajoz zones

- In some cases appeared streets from other cities and countries.

- Most part of times application had several problems in calculate the route, may be due the problems with server. The seniors commented it is easy to accept the change of route, but it is difficult to obtain the change of route (at 4th times in the most part of the cases or don't do it). When the route is in course the numbers of meters till the next step or destination in the above command are incorrect (normally is a difference between 10 -20 meters) but in the map route the distance seems correct.

- The most part of users mentioned the arrows must be bigger as well the text in above command. Sometimes the text appeared in English (in route indications).

- Some seniors commented that in some zones are few POI's and in others zones didn't exist POI's.

- It can be mentioned others errors in the app, when it was included an intermediate point appeared the following text in English:

Image 29- Message error with intermediate point

- When seniors selected their favorite routes the application didn't give the option to calculate the route, appear the following image in departure and destination tables.

Image 30-Application didn't calculate routes from favorite routes

- In some cases when seniors introduce a route appeared the following message in English:

Image 31-Error message when senior route it is inside Badajoz map data boundary

Image 32-Other error message when senior route it is inside Badajoz map data boundary

- The application in some cases didn't calculated the route from "new route from here" or from " back" button.

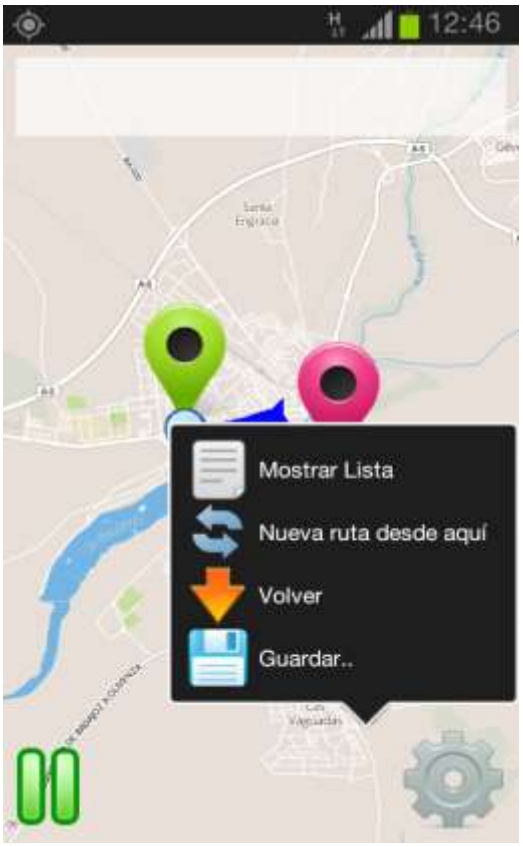

Image 33-Problems in calculate the route by "new route from here" and "back" button

Annex B – 1st Phase Hungarian Results

Design Tests

Usability Tests

Mobility Tests

"This project has been funded under the third AAL call, AAL-2010-3. This publication [communication] reflects the views only of the author, and the Commission cannot be held responsible for any use which may be made of the information contained therein"

PROJECT Nº: AAL-2010-3- 014

Design Test Results (1st Phase) Hungary

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Participant(s)	
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Classification	Public
Version	V03
Total number of pages	28

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1. Design Questionnaire Test

2. Hungarian Results

The design test was held in the SMIMO and in the BZN. It was organized in three parts: in the SMIMO 7 seniors tested the mobile app and 1 tested the web app. These tests were held on the 25th and on the 27th of June 2013. Then 2 seniors made the web app design tests on the 8th of July in the BZN.

2.1. Pc Test

At the SMIMO there was just was one lady (age 64) available from those who can use PC during the time when the design tests were taken place there. So in order to have relevant results, we made an appointment with 1 older and 1 senior employee at the BZN (with the age 54 and 66) with rather high computer skills on the 8th of July to be able to obtain more conclusions. So all together we tested the web app with 3 people.

Image 13- WayFiS PC test (Hungary)

Image 14- WayFiS PC test (Hungary)

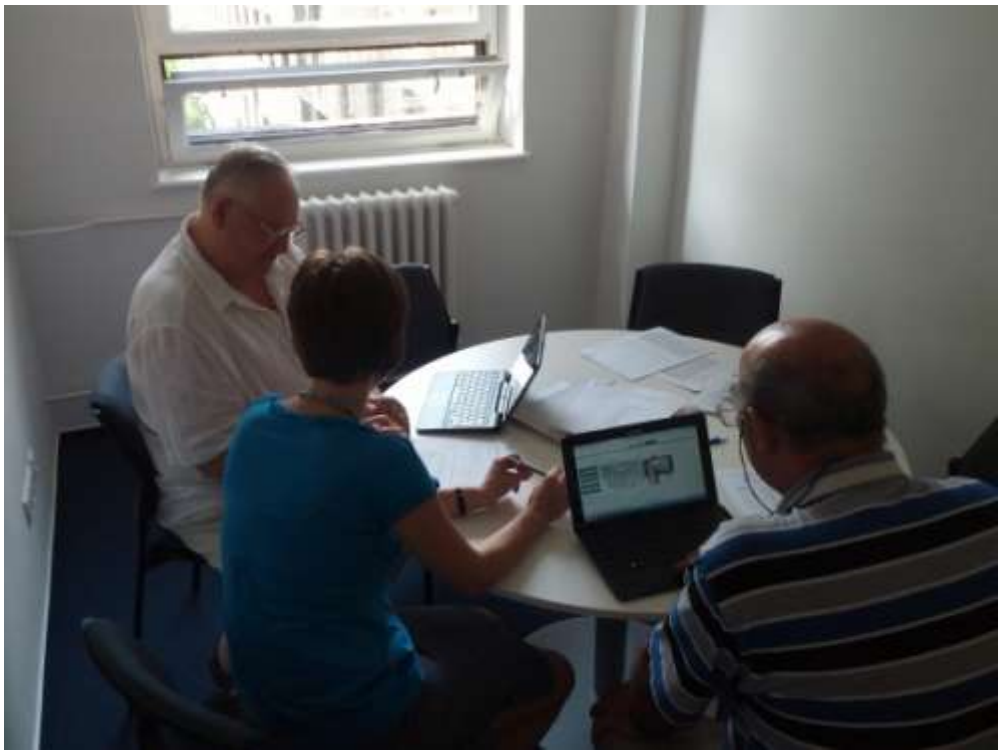

Image 15- WayFiS PC test (Hungary)

The test started with a general introduction then I let them free to explore the WayFis application. The application was tested in three different browsers, which were Explorer, Chrome, and Firefox in order to view the difference between them.

General	Clearly identify each point	87%
	All points are needed	100%
	The blocks are well defined	100%
	It displays all the necessary information	93%
	TOTAL	**95%**
Identity and information	Information is organized	87%
	You understand the information on the page	80%
	TOTAL	**83%**
Labeled	The images/icons are descriptive	80%
	Fails to distinguish clickable areas from others not	27%
	The site is balanced, it is not overloaded	87%
	Pages titles are correct	93%
	The button tooltips are useful to understand their function	53%
	The position of the buttons is consistent with its function	80%
	The purpose of the buttons is clear	80%
	TOTAL	**71%**
	The organizational structure and navigation is adequate	87%
	Links are easily recognizable	53%
	The structured navigation allows to entering properly	93%
	There are navigation elements to guide the user about where and how to undo their navigation	53%
	It is easy to organize a trip	87%
	It is easy to modify a trip	87%
	It is clear how the system shows the route	60%
	The purpose of the intermediate points is clear	100%

Structure and navigation	It is useful to be able to select recently used items when clicking on the address fields	100%
	It is useful to have favorite routes	100%
	The relationship between the personal settings on the web and its implications for route planning is clear and useful	100%
	The auto complete feature is useful	87%
	The management of saved items (routes, points) is accessible and easy to handle	80%
	View a route recently planned is simple	73%
	Navigation between tabs (routes) is simple	73%
	Navigate around the map is easy	73%
	The purpose of saving a point or route is clear	67%
	TOTAL	**81%**
Appearance	It is avoided overload information	93%
	There are areas in White between objects to rest for the eyes	93%
	Colors are suited to WayFis image	93%
	There are clearly visual hierarchies established	93%
	Length page is enough	93%
	Width page is enough	93%
	TOTAL	**93%**
Accessibility	The font size is large enough to view it.	73%
	The font type, typographic effects, alignment, line width and employees make reading easily	100%
	There is a high contrast between the font color and background	93%
	Web site is compatible with different browsers	40%
	You can print the page without problems	93%
	The download time is right	93%
	TOTAL	**82%**

Table8-WayFiS Results PC Design Questionnaire

2.1.1. General

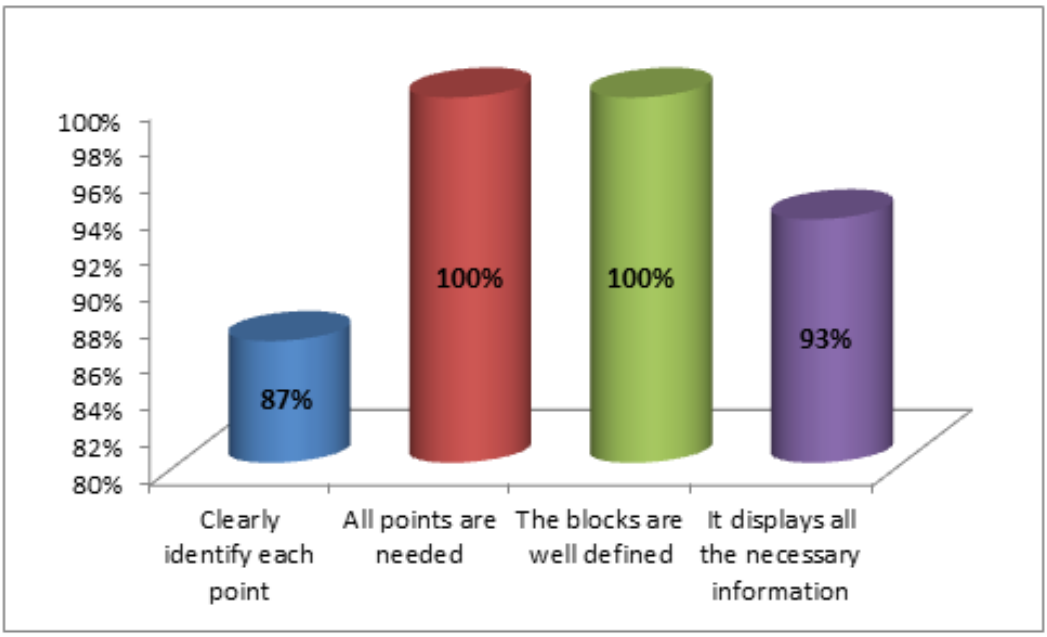

Figure 82-General PC

All the three people have used a routeplanner before. So actually they could explore and understand the aim and the functionality of the app easily.

All of them said that all points are needed and the blocks are well defined, but because there were some missing translations (some botton appeard in English) that state that each points are clearly identify achieved 87%. Generally they liked the design and the picture of the main page.

2.1.2. Identity and information

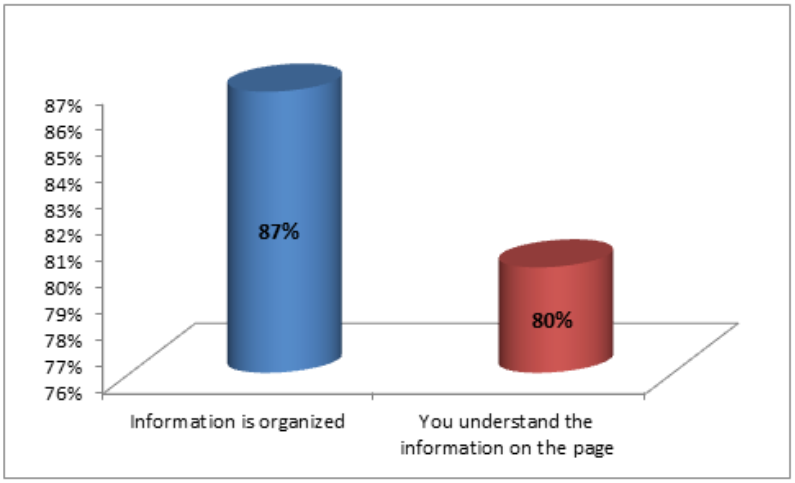

Figure 83-Identity and Information PC

From the results obtained it is concluded that a 87% find the information organized, which means it's quite clear for them where and how the information organized. And even 87% said that each point is clearly identify a little bit less, 80% said that she or he understands the information on the page.

Those who made the PC test asked some question about how the app appears on the mobile and what were the others opinion. They also started to share their experience of using the smart phone and the reason why they prefer a normal browser.

2.1.3. Labeled

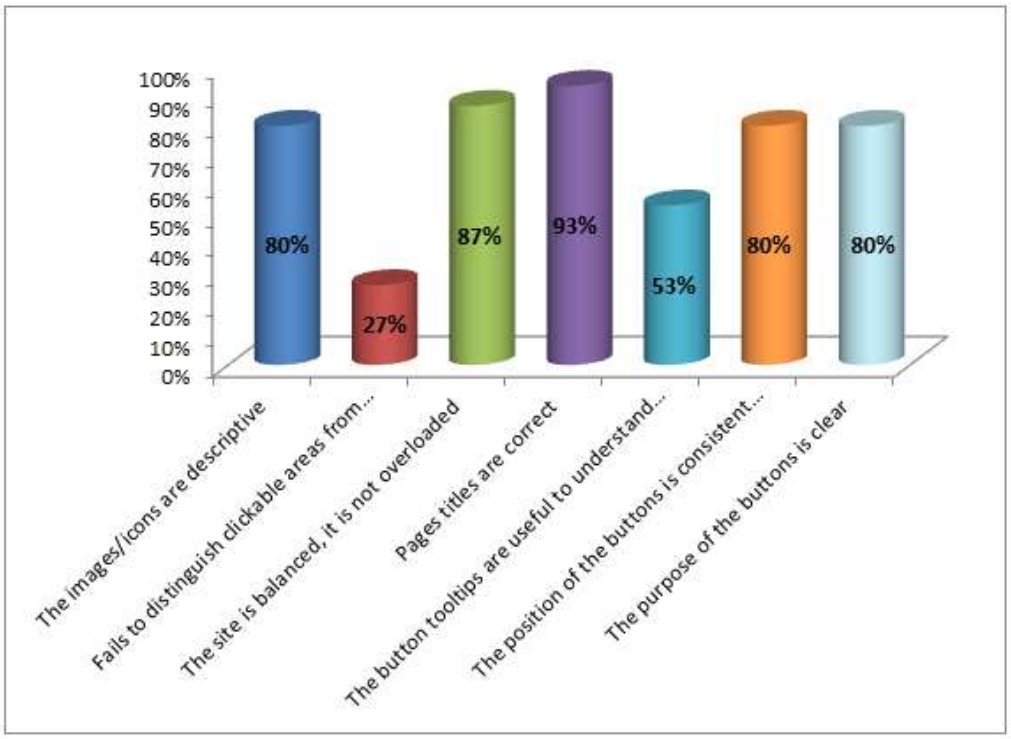

Figure 84- Labeled PC

Seniors taking part in testing the web app recognized the images and icons at the first time. Most of them (80%) said that the images and icons are descriptive. One of them said that for him the tram is yellow (because it is yellow in Hungary) so for him a yellow icon for the trams would be better.

- They were quite satisfied with the balance of the sites and with the title of the sites, but the difference between the favorite routes and personal sites were not clear for them for the first time.
- They couldn't find the button tooltips so easily which sometimes appeared in English, too that's why the state that the button tooltips are useful to understand to understand their functions achieved only 53%.
- The position of the buttons was also not always good when for example they wanted to plan a route and also because of the missing translation the last two states got 80%.

2.1.4. Structure and Navigation

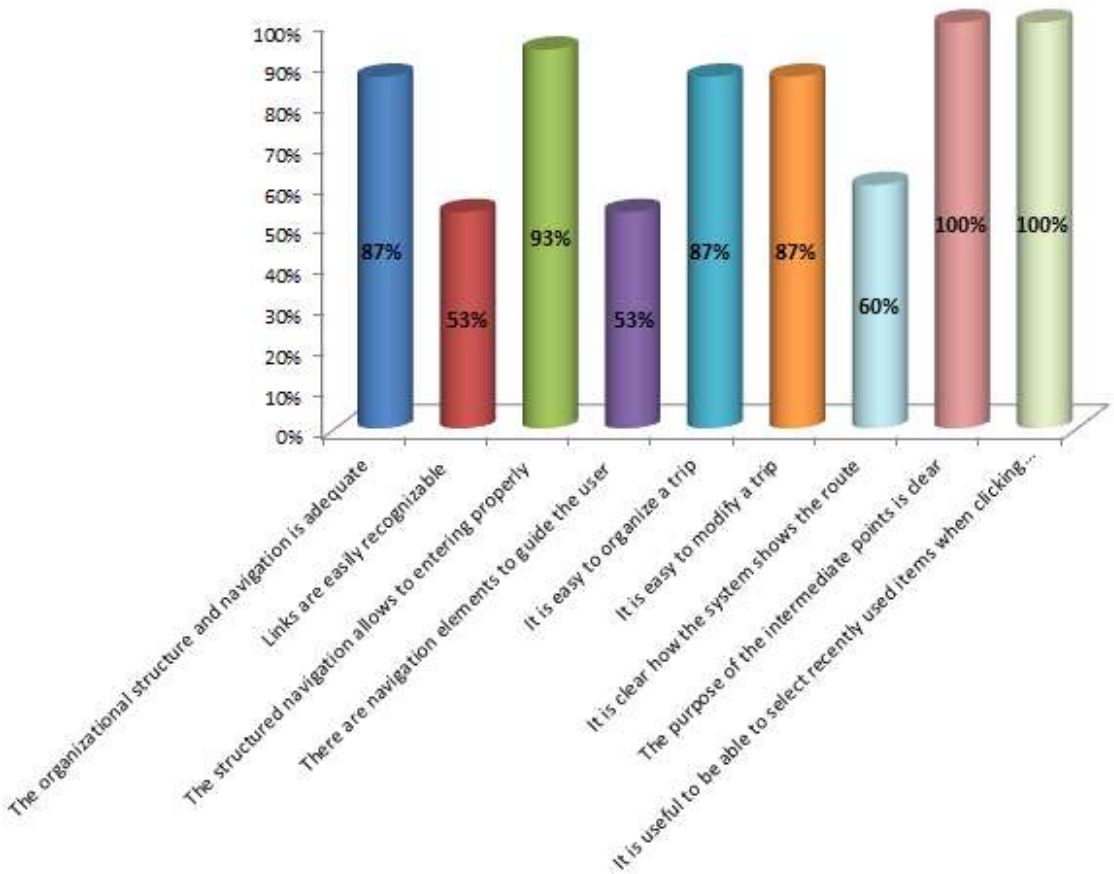

Figure 85-Structure and Navigation 1 PC

87% of the Seniors found the structure and the navigation adequate, and that it is easy to organize or modify a trip which is not surprising because of the participants' background. But when they tried to modify the trip for the first time it was not so easy for them because the only way what they could do is to plan a route from the beginning. Changing, selecting between different routes turned out easy for them and they also enjoyed finding out the differences of the routes offered by the planner. Finding the links were not so easy for them what the 53% shows, too.

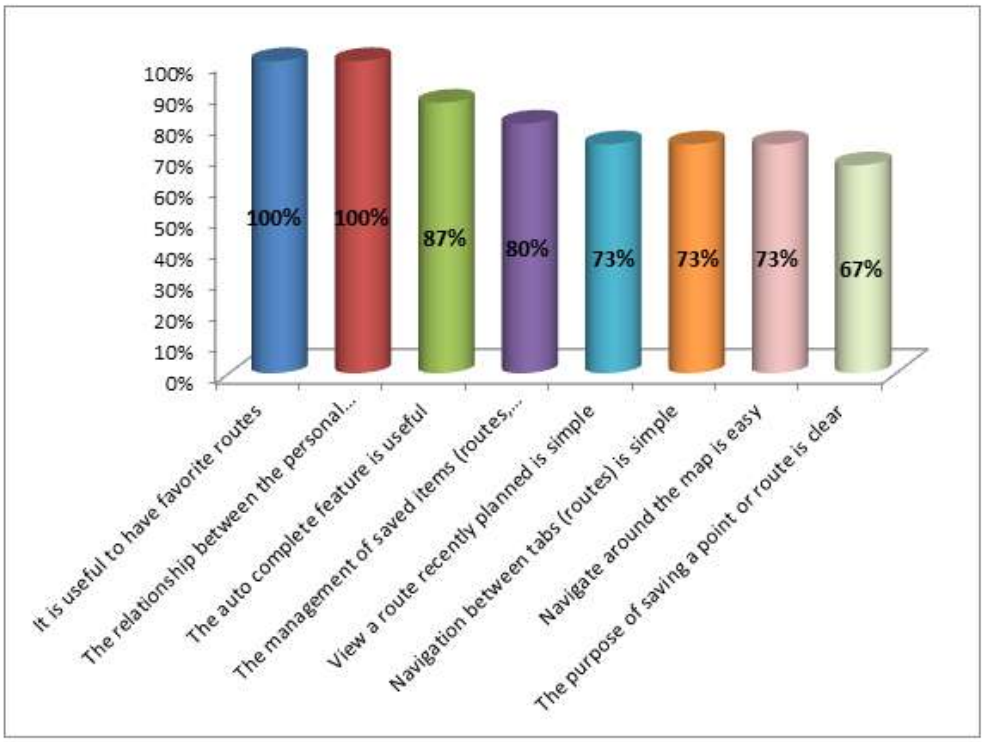

Figure 86- Structure and Navigation 2 PC

Generally the functions of the route planner seemed to be very useful for the Seniors. Everybody thinks that having favorite routes is very-very useful because in this case they don't have to always route the plan or type the departure and destination. That's why it was good to see that the purpose of saving the route was easy for them. But they couldn't find out by themselves how they can save the points so that's why the last state achieved 67%. They suggested to have a save button next to the departure and destination on the showed and chose route. Nearly 90% says that the auto complete feature is also useful but the reason why it didn't get 100% is that if the app offers the auto complete feature it is offering not just in the city where they wanted to plan their route but in others, too which was not understandable for them. The navigation was not always easy for the participants because first they had to find out the departure and the destination on the map. So that's why it got 73%.

2.1.5. Appearance

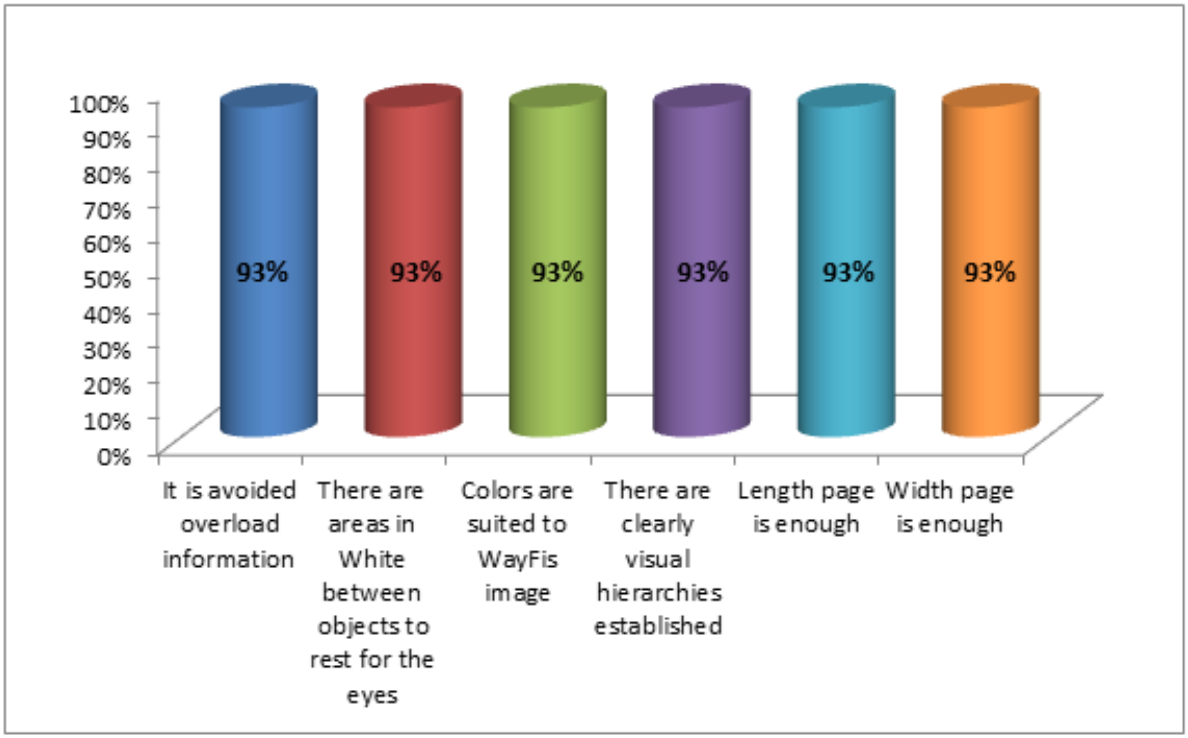

Figure 87- Appearance PC

In general they said that the appearance was good. Overall they gave a constant 93% result for all the states. Which means that they liked the appearance of the app and they understood the hierarchy of it, too. Also they were satisfied with the length and the width of pages, but they had some suggestions about it like:

- it would be better if for clicking on the login button they should not go down or
- if when the route the plan they would see the whole route planner window without scrolling to the right:

Image 16- Example of planning a route

But generally they think that the colors are suited to the WayFis image and they were also happy concerning the amount of the information on sites.

2.1.6. Accessibility

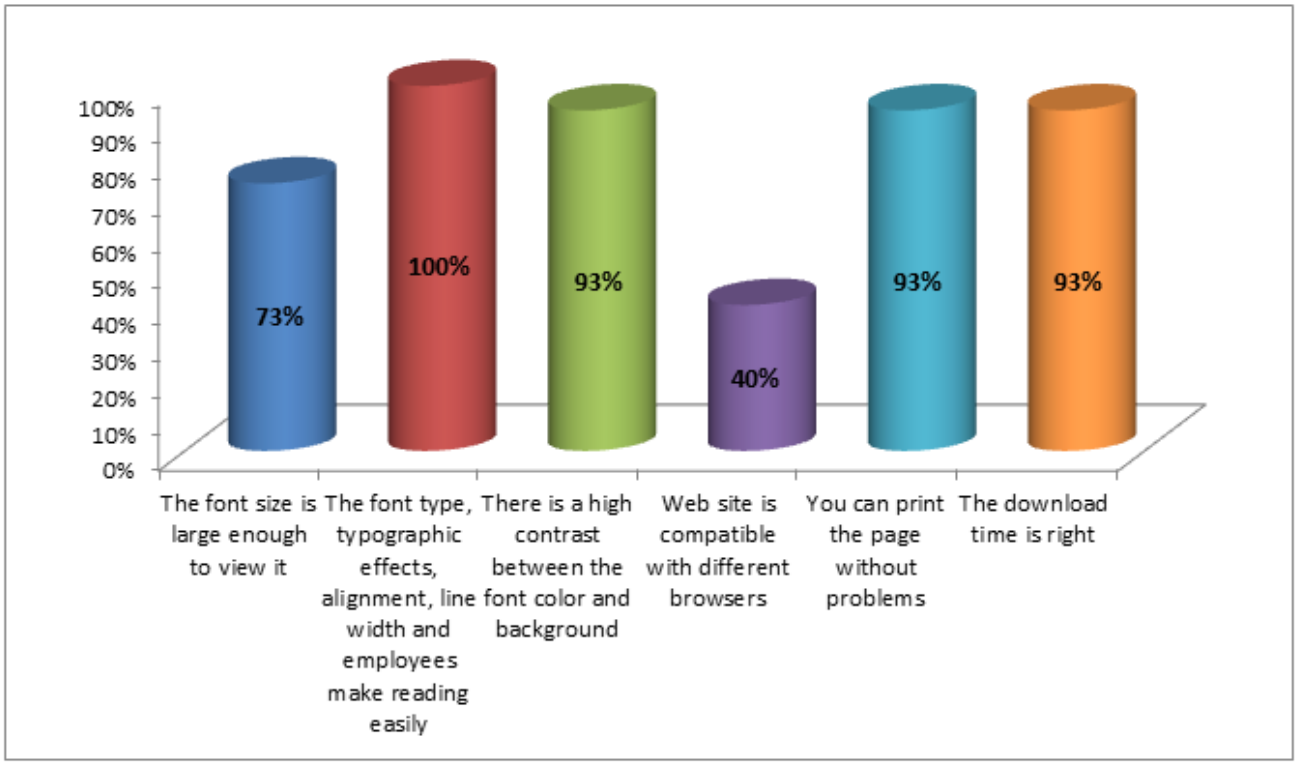

Figure 88- Appearance PC

The registration turned out easy for them but the confirmation email about the registration didn't contain a link to click. They had to highlight the link and paste to the browser which was easy but not so user friendly for them.

But otherwise about the accessibility the feedbacks were generally good, and even if it was not the test of the mobile app the font size also got lower result. They first of all complained about the font size of the streets on the map. The lowest percentage (40%) for the accessibility was for the compatibility with different browsers. Because they could only plan the routes with the Firefox.

2.2. Mobile Test

This test was conducted by 7 Seniors, 2 men and 5 women, with a range of ages from 58-82. There were 5 mobiles available: 4 Samsung SIII mobiles were given by SMIMO, and one Samsung Galaxy Nexus by the BZN. The evaluation started at 9:30 in the morning with an introduction about smartphones and how the internet works on it because just two of the participants have used a smartphone and the internet on it before. Then the way how WayFiS application works has been shown for them and we started to go through the questionnaire.

Image 17- WayFiS Mobile test (Hungary)

Image 18- WayFiS Mobile test (Hungary)

General	Clearly identify each point	69%
	All points are needed	89%
	The blocks are well defined	71%
	It displays all the necessary information	80%
	TOTAL	**77%**
Identity and information	Information is organized	80%
	You understand the information on the page	71%
	TOTAL	**76%**
Labeled	The images/icons are descriptive	91%
	Fails to distinguish clickable areas from others not	29%
	The site is balanced, it is not overloaded	94%
	Pages titles are correct	97%
	The button tooltips are useful to understand their function	86%
	The position of the buttons is consistent with its function	80%
	The purpose of the buttons is clear	77%
	TOTAL	**79%**
	The organizational structure and navigation is adequate	91%
	Links are easily recognizable	77%
	The structured navigation allows to entering properly	63%
	There are navigation elements to guide the user about where and how to undo their navigation	74%
	It is easy to organize a trip	80%
	It is easy to modify a trip	63%
	It is clear how the system shows the route	77%
	The purpose of the intermediate points is clear	60%
	It is useful to be able to select recently used items when clicking on the address fields	100%
	It is useful to have favorite routes	94%
	The relationship between the personal settings on the web and its implications for route planning is clear and useful	97%

Structure and navigation	The auto complete feature is useful	94%
	The management of saved items (routes, points) is accessible and easy to handle	80%
	View a route recently planned is simple	74%
	Navigation between tabs (routes) is simple	77%
	Navigate around the map is easy	74%
	The purpose of saving a point or route is clear	83%
	TOTAL	**80%**
Appearance	It is avoided overload information	89%
	There are areas in White between objects to rest for the eyes	94%
	Colors are suited to WayFis image	97%
	There are clearly visual hierarchies established	97%
	Length page is enough	97%
	Width page is enough	97%
	TOTAL	**95%**
Accessibility	The font size is large enough to view it.	66%
	The font type, typographic effects, alignment, line width and employees make reading easily	91%
	There is a high contrast between the font color and background	94%
	Web site is compatible with different browsers	-
	You can print the page without problems	-
	The download time is right	100%
	TOTAL	**88%**

Table 9-WayFiS Results Mobile Design Questionnaire

2.2.1. General Mobile

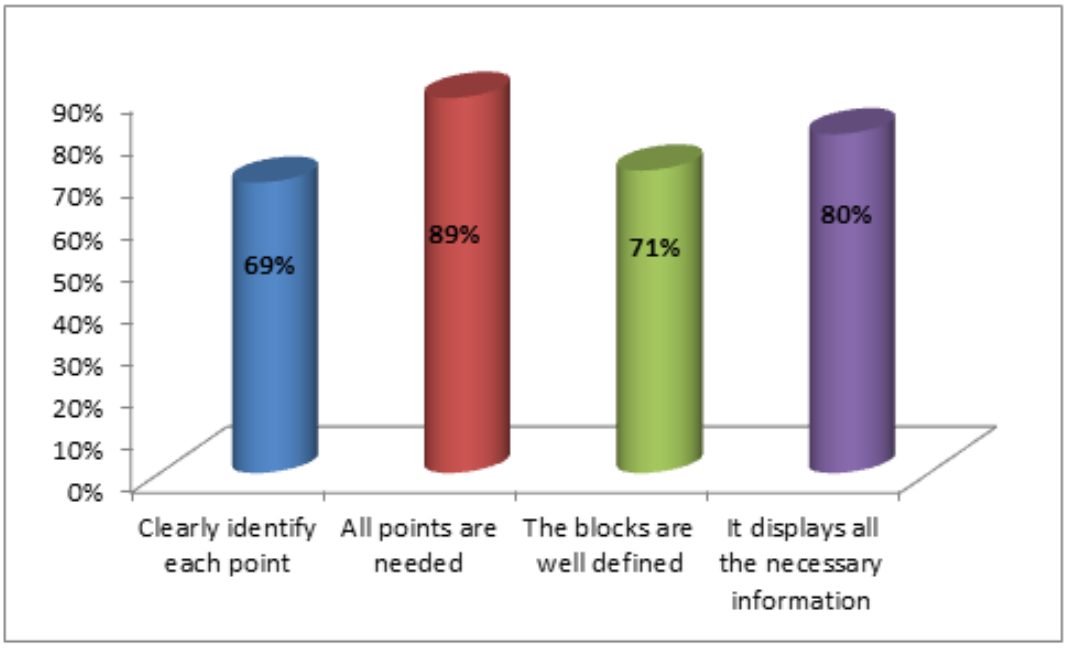

Figure 89- General Mobile

Even if in the mobile app the buttons are appeared more clearly, because the participants are not really used to the smartphones the explanation of the buttons was needed. And also because the Seniors were not used to use any route planner the blocks were just 71% well defined for them. But their biggest problem was how to type in the small text boxes on the very small keyboard which is depending on the type of the used mobile.

To be registered it's quite difficult for them, as they do not have email, and if they have it was really hard to log in their email address on the mobile. They actually suggested that it would be easier with a sms or with another verification through another button for example.

2.2.2. Identity and Information Mobile

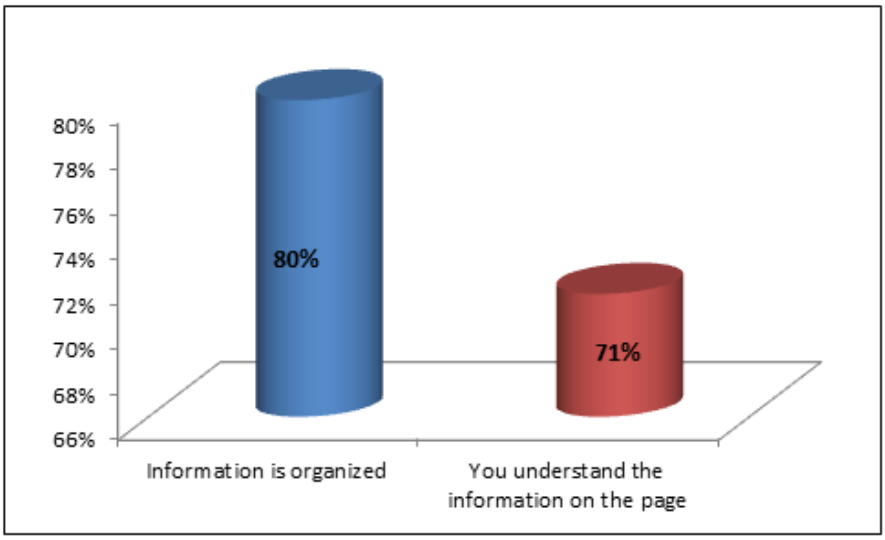

Figure 90-Identity and Information Mobile

80% seniors thought that the information was organized in the app and 71% said that she or he understood the information of the page even if during the tests they asked me about the meaning of the different information. They agreed that one of the most important and useful function is the personal settings because it makes so many difference if you have any specific need. But they told me that changing a personal setting is just so quick. Maybe it would be better to have an OK and Clear button on the pop-up window where they can change their settings. And they always mentioned that the fonts of the letters are small.

They could also understand what is the meaning of the PoIs, but they said some comments about it after planning the route with PoIs, like:

- it would be good to have a PoI showing some shops
- to have PoI during the whole route maybe every 200 m

2.2.3. Labeled

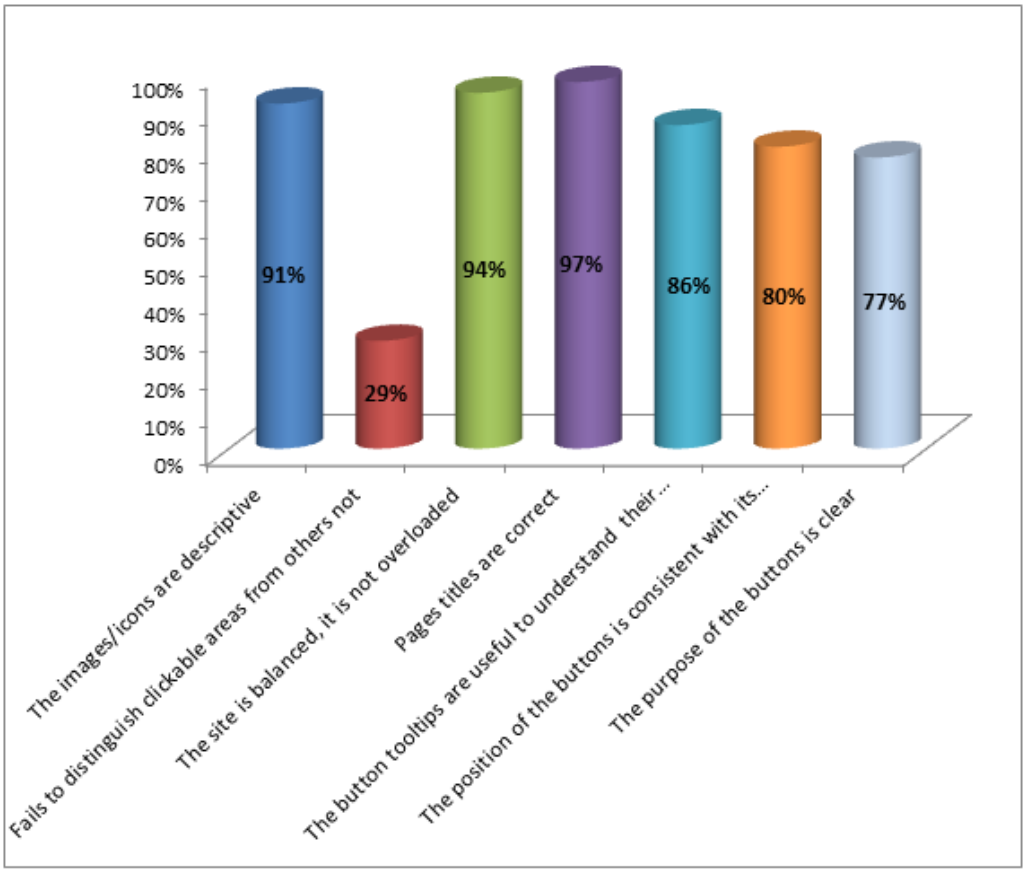

Figure 91-Labeled Mobile

After explaining what images and icons mean, 91% of the Seniors found them good. They also think that the site is balanced and not overloaded with information. The highest percentage was given to the page titles but because they didn't use a route planner before they didn't even know what else can be used as a title. Most of them (86%) like in the PC tests also think that the tooltips of the buttons are useful, but actually they couldn't see and find them at all. And even if they think that the position of the buttons is good the purpose of them is not clear just for 77%.

Some of the comments they made were:

- Bigger letters everywhere.
- To be able to read street names.

2.2.4. Structure and Navigation Mobile

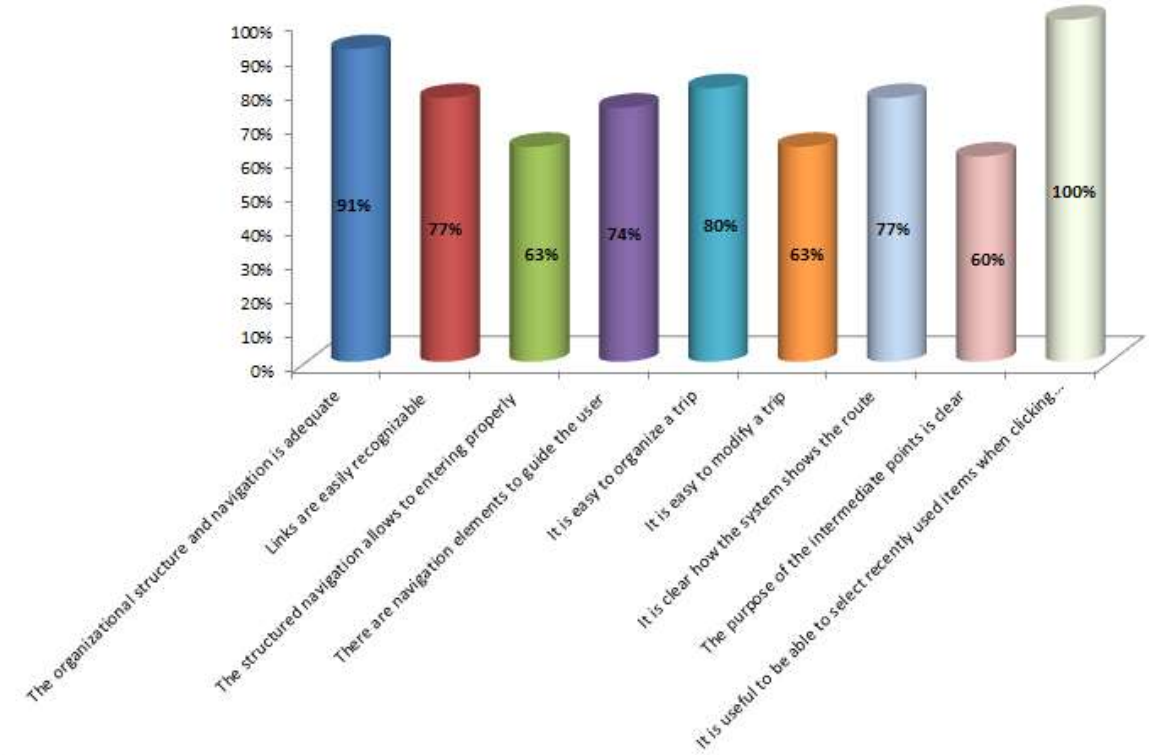

Figure 92- Structure and Navigation Mobile 1

91% find the structure and navigation adequate, even if in the mobile application it was not easy for them how to go back and on. A 77% said that links were easy recognizable, but actually they was not sure about the meaning of the link. A little bit less, just 74% found the navigation elements to guide the user good, and the reason is actually that didn't felt that they have been guided. Exactly 80% find easy to organize a trip, but to modify it was much harder for them. A 77% agreed on how clear the system showed the route even if many times they could not read the street name on the map. But they could see the directions on the planned route. The purpose of the intermediate points got the lowest percentage for what the reason was that it didn't appear automatically like the destination and departure. Giving 100% for the state that it is useful to be able to select recently used items is not surprisingly because typing on the smartphone was really hard for them.

They also made some suggestions like:

- If they would like to change the destination or departure of a planned route turned out problematic and they don't want to start to type the points again
- When they would like to change the destination or departure it is not good that first they need to delete the long address by characters
- More than one intermediate point would be also useful
- They think it would be useful if the planner says some minutes before if they should change their direction on their way.

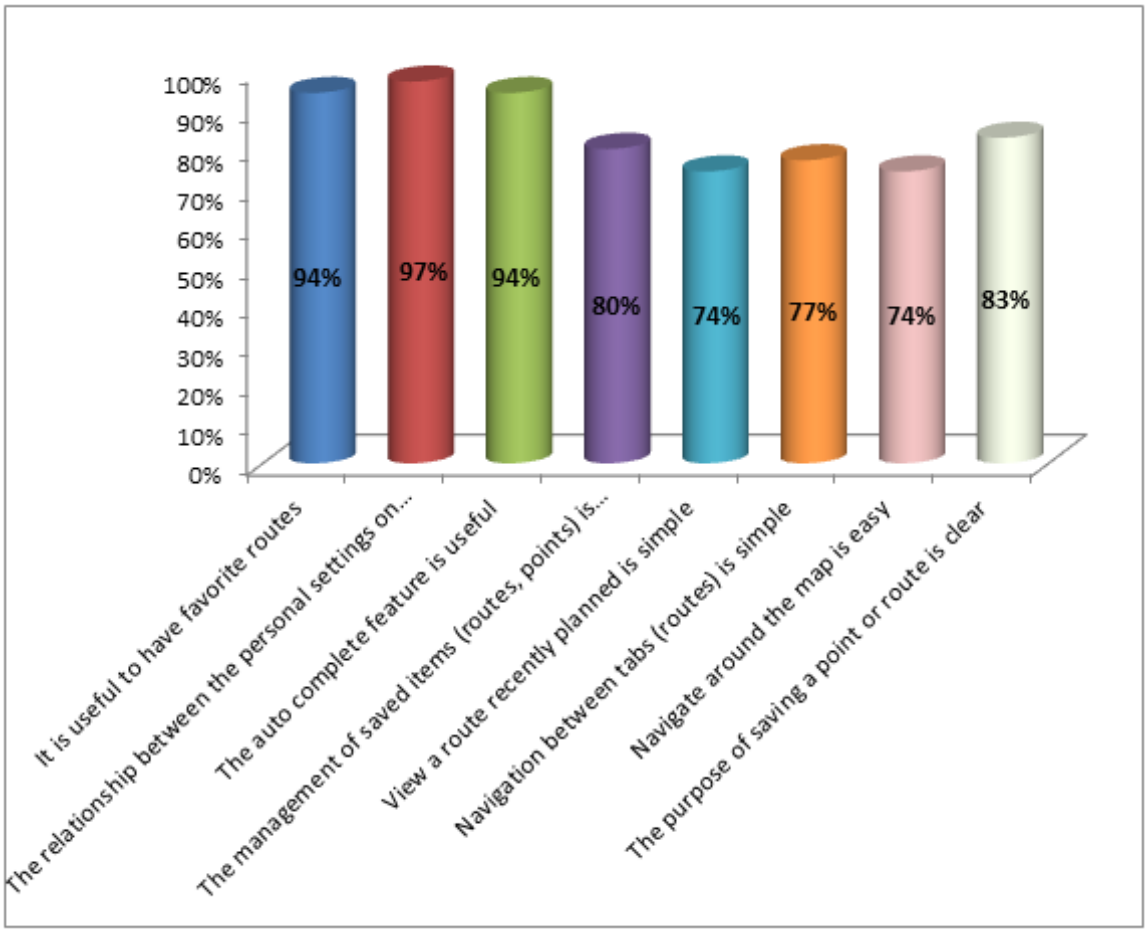

Figure 93-Structure and Navigation Mobile 2

Functionalities achieved quite high percentages concerning usefulness. How it was mentioned typing was really hard for the seniors because of their hands and the small keyboard so of course having favorite routes and the auto complete feature is important what the achieved 94% shows, too. The possibility of the personal settings (97%) made the app for them more user friendly. Navigation between the routes or the recently planned routes or around the map turned out not so easy because for these they should click on many times. The purpose of saving a point or route or how they can manage the saved times looks rather easy for them, but there were some problems with these functionalities, like:

- Saving the routes are useful but they didn't appeared on the plan after clicking on them
- They could easily handle the purpose of saving the route, but saving the points was much harder.

2.2.5. Appearance

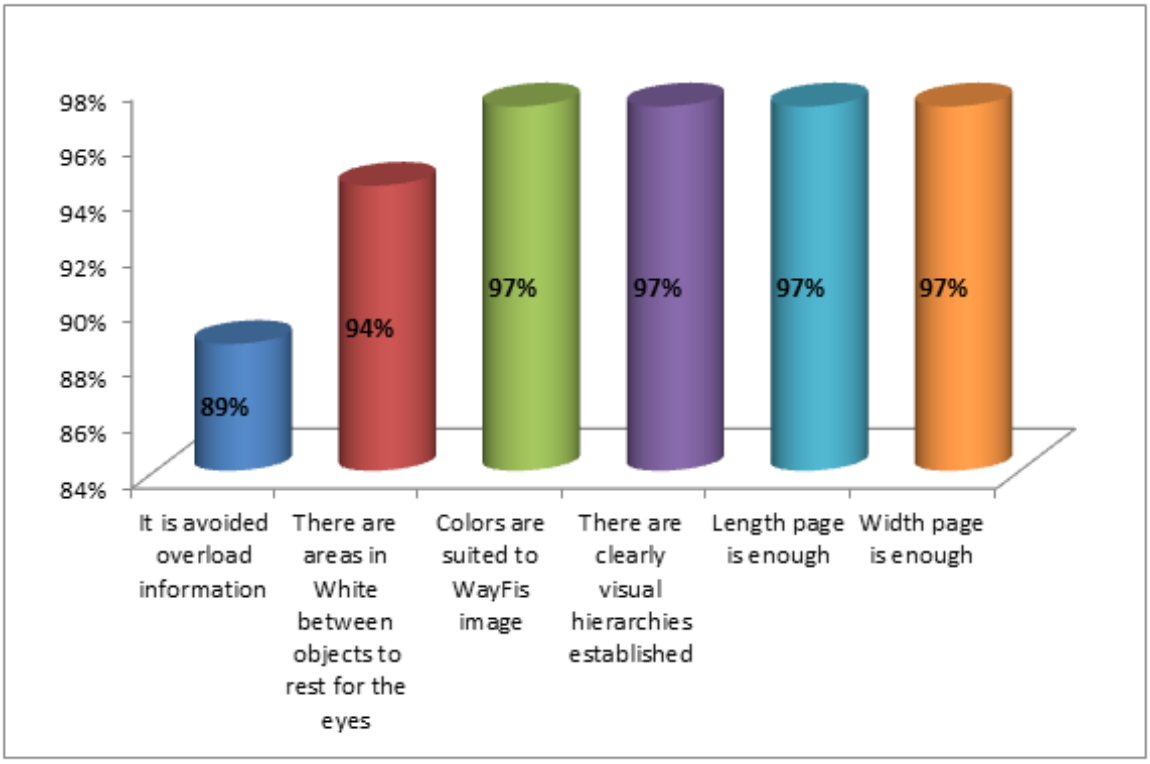

Figure 94-Appearance

Like in the web application, in the mobile Seniors didn't find it was an overloaded information, even if they couldn't understand properly what each part meant they found the structure of the mobile app very simple. The color of WayFis were ok for them, and they think they could feel the difference clearly the hierarchies as it's showed by the 97% which is maybe a higher percentage if we compare with the number of the questions during the time they tried the application. They also said that the length and width of the pages are enough (97%) because how they told me the most important things is that most of the pages (out of the personal settings) appeared as one site.

- They feel letters and buttons should be bigger and clearly.
- More than one PoI not always appeared in a good way
- In the personal setting side they couldn't realize the hierarchy so well, because they couldn't see the categories showed by a different style of the letter

2.2.6. Accessibility

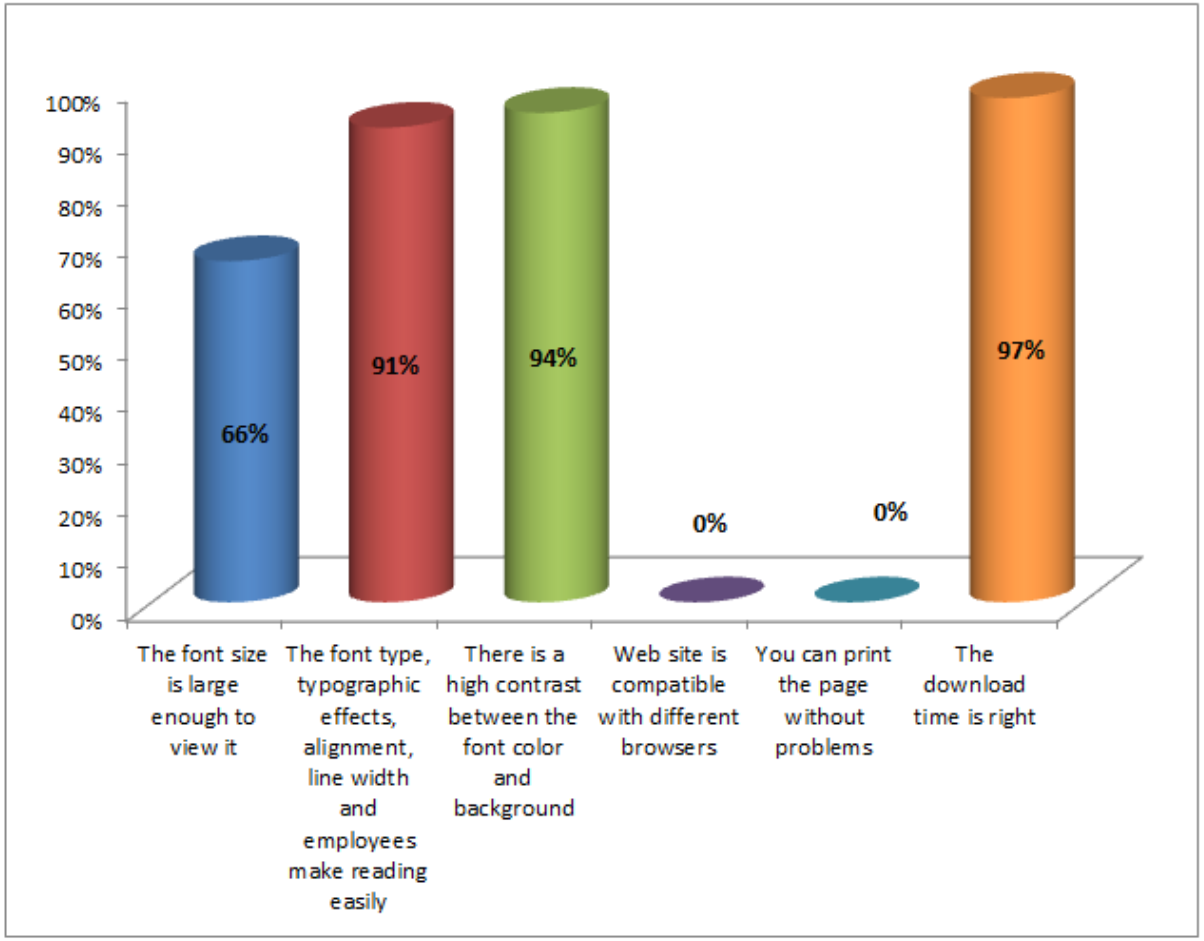

Figure 95-Accessibility

The 66% said that the size of the fonts is good. They actually complained about the size of the font during the whole tests even most of them used glasses. Otherwise the letters were readable for them and the contrast between the font color and the background also achieves quit high (94%) percentage.
As this test was with android, they didn't have to entering any browser, so that's why for the question concerning the different browsers nobody replied. Like for making the prints because there were no chance to do it. About the download time they told me that the touchscreen is just so sensitive for their hands.

As a last possibility they had the chance to share their opinions about the app freely:

- The screen turns off the way it's selected in settings, which is quite annoying.
- It doesn't allow you to rotate the mobile when you plan a route.
- It would be nice to have a pop-up window if there is any changes in the timetable
- It would be nice if the app would show some benches where they can sit for a while
- Different PoIs can be appeared different times (like they think showing more toilets would be really helpful)
- During the travelling it would be useful if the app would remind them about the options of nearby PoIs.

2.3. Hungarian Conclusions

- The registration part is complicated for them; they do not feel comfortable doing it, all of them needed help to fulfill the data. Some of them could even not do it because they didn't have an email address.
- To make the registration on the PC was easier, but it was also complicate a bit because the link in the confirmation email did not work as a link.

- Seniors don't understand properly all the meaning of the points and blocks just after many explanations

- It was hard for them to use the touch screen because of their hands. They click on something else they wished many times and that's why they were afraid of make a mistake in the app.

- The size of the fonts can be much bigger

- They liked the personal setting opportunity and they are curious if it shows a way which is really good for them.

- They didn't feel the real difference between the personal sites and favorite routes.
- It doesn't allow you properly to see the favorite routes on the map.
- it is difficult to change the routes
- They think in the mobile app more than one intermediate point would be useful
- You could not do zoom on the screen, just on the map, so in this case you can not make the fonts bigger.
- But generally they liked the applications and they think it is a very useful thing during longer trips.

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Usability Tests Results (1st Phase) Hungary

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Usability tests-Hungarian Results

1- Mobile tests

The usability test was held in the SMIMO and in the BZN. It was organized in two parts: in the SMIMO 4 seniors tested the mobile app on the 27th of June 2013 and then 2 seniors made the web app design tests on the 8th of July in the BZN. The tests at the SMIMO were filled by me (Petra Csobánka) with the answers of the seniors because they were not able to concentrate on the mobile app and fill the questionnaire at the same time.

Image 34-Usability tests (Hungary)

USABILITY QUESTIONNAIRE	
Date	
Name	
Age	
Gender	Male 0% Female100%
Place of residence	Big city (over 500 thousand) medium sized city (100-500 thousand) small town (10-100 thousand)100% village
Level of education	No education/primary school25% Secondary school50% College (diploma) University 25%
Current employment status	Free lancerEmployee Civil servant LabourerHousewife/-man Retired 100% other_____
Computer skills	Very high Rather high Rather low Very low50% Non50%
First steps in the app	Time to switch on 1-10 seconds0 10- 20 seconds25% 20 – 30 seconds 25% More than 30 seconds 50%

	Registration ☐ Easy ☐ Rather hard25% ☐ Very hard, because 75%
	Signing in ☐ Easy ☐ Rather Hard75% ☐ Very hard, because… 25%
Enter a departure, destination	Usability ☐ Easy to use 25% ☐ rather hard to use50% ☐ hard to use, because 25%
	Changing of them(Departure and Destination address) ☐ Easy ☐ Rather hard to do75% ☐ Hard, because 25%
	The way how they appear color on the map is ☐ Good75% ☐ Good enough25% ☐ Could be better, like .....
	The way how they appear size on the map is ☐ Good50% ☐ Good enough50% Could be better, like .....
Route	The way how it appear color on the map is ☐ Good75% ☐ Good enough 25%

	☐ Could be better, like .....
	The way how it appear size the map is ☐ Good50% ☐ Good enough50% Could be better, like .....
	If you want to change the route to do it is....? ☐ Easy ☐ Regular 25% ☐ Difficult, because.....75%
	The color of the arrows showed are… ☐ Good100% ☐ Good enough ☐ Could be better, like .....
	The meanings of the arrows showed are… ☐ Good100% ☐ Good enough ☐ Could be better, like .....
Screen	Images and letters are… ☐ Big enough ☐ Medium75% ☐ Small25%
	The font type is ..... ☐ Good75% ☐ Good enough25% ☐ Could be better, like .....

	Brightness of the screen is… ☐ Enough100% ☐ Regular ☐ Bad
	The information on the sites are ☐ Enough100% ☐ Regular ☐ Too much
POI's	Your profile settings and the POI's showed to you…? ☐ Match exactly50% ☐ Just a few match50% ☐ It doesn't match at all
	POI's simbology is understable…? ☐ Clearly100% ☐ Regular ☐ Not at all
	POI's Showed along the route are…? ☐ Enough100% ☐ Too much ☐ Few
Suggestions	Please feel free to share your opinion about the route plan

Table 10-Wayfis Usability tests results (Mobile application)

1.1 Gender

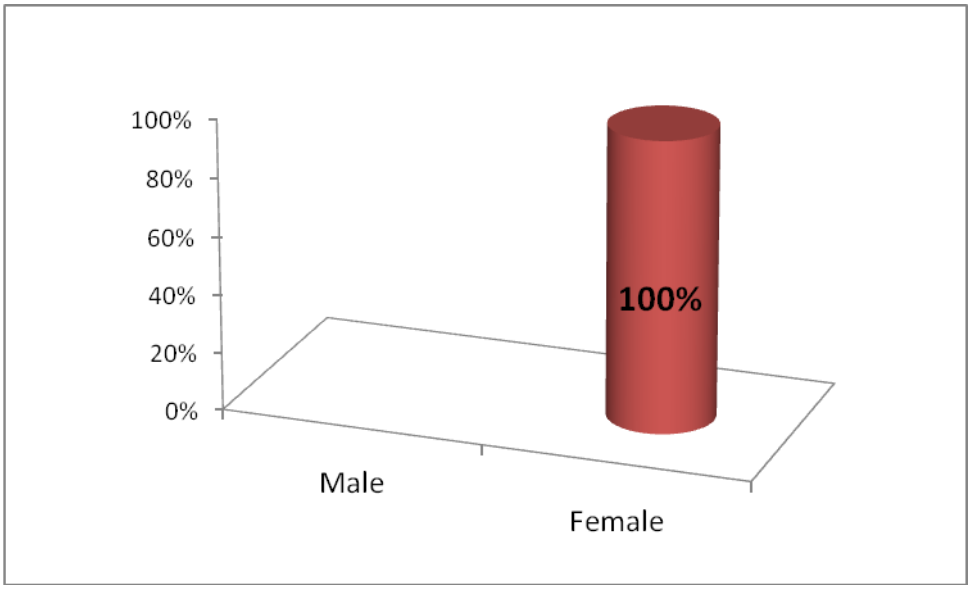

Figure 96-Gender

Concerning the gender of seniors tested 100% were women.

1.2-Place of Residence

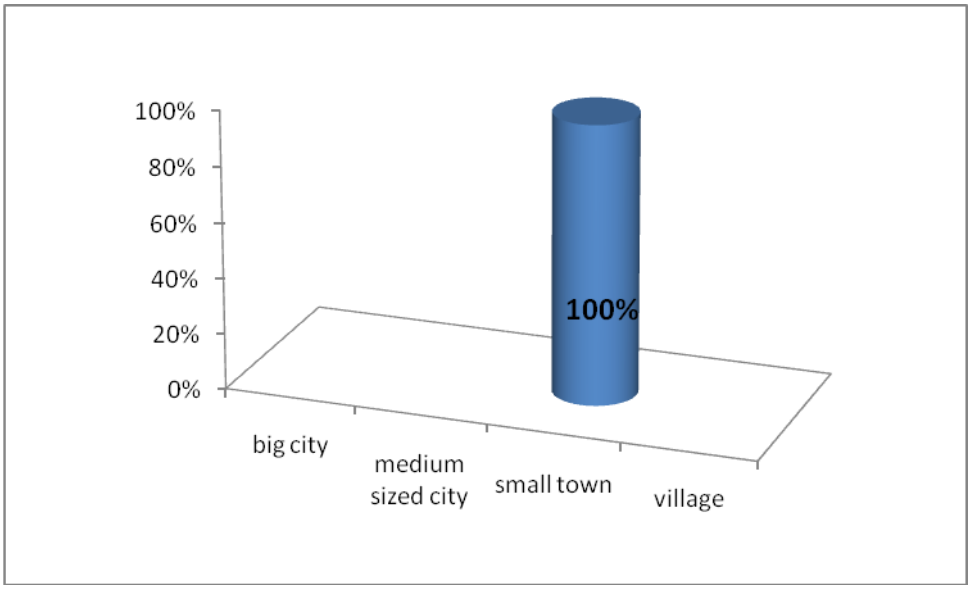

Figure 97-Place of Residence

The SMIMO is located in Tökö̈l, which is a small town in Hungary, so that's why the result that 100% of the participants' place of residence is a small town was clear from the first time. The web application was tested by people from a big city, Budapest.

1.3-Level of Education

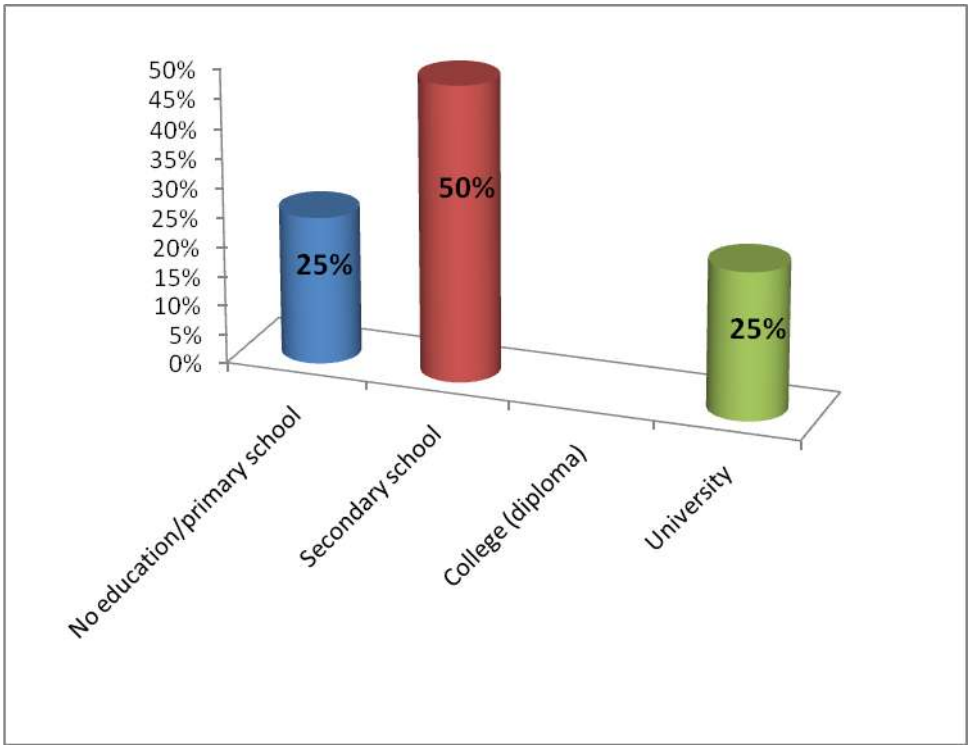

Figure 98-Level of education

About the level of education 25% of seniors have no educational or primary school background, 50% finished the secondary school and 25% have university studies.

1.4-Current employment status

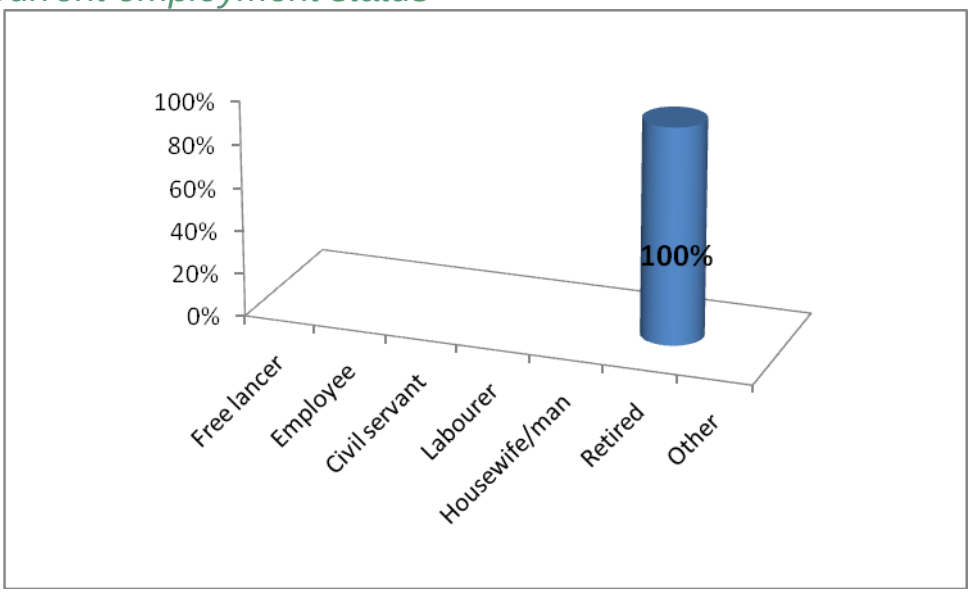

Figure 99-Current employment status

Concerning employment status 100% of seniors tested are retired.

1.5-Computer skills

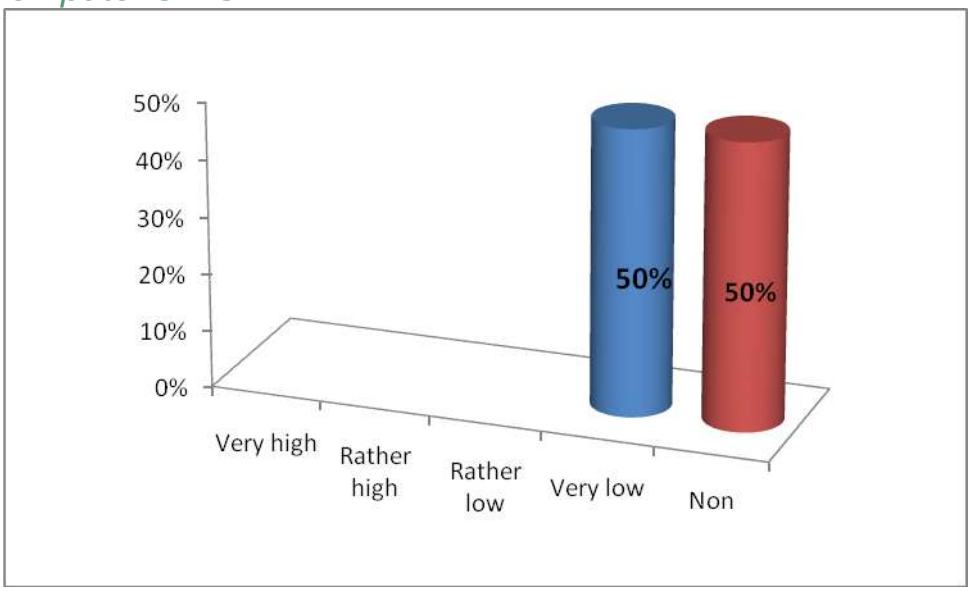

Figure 100-Computer skills

In overall the computer skills of seniors at the SMIMO are very low, 50% very low and50% don't have computer skills.

1.6-First steps in the app

1.6.1-Time to switch on

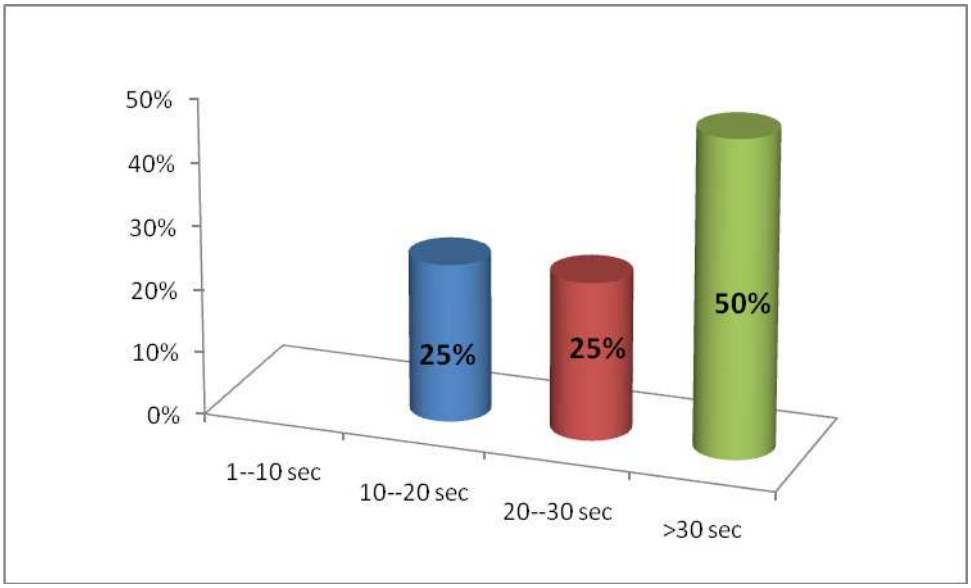

Figure 101-First steps in the app:Time to switch on

The users considered the time to switch the application rather slow which is reasonable because of their computer skills level. In 25% of cases the duration was 10-20 seconds or 20-30 seconds and 50% needed more than30 seconds to switch on the application.

1.6.2-Registration

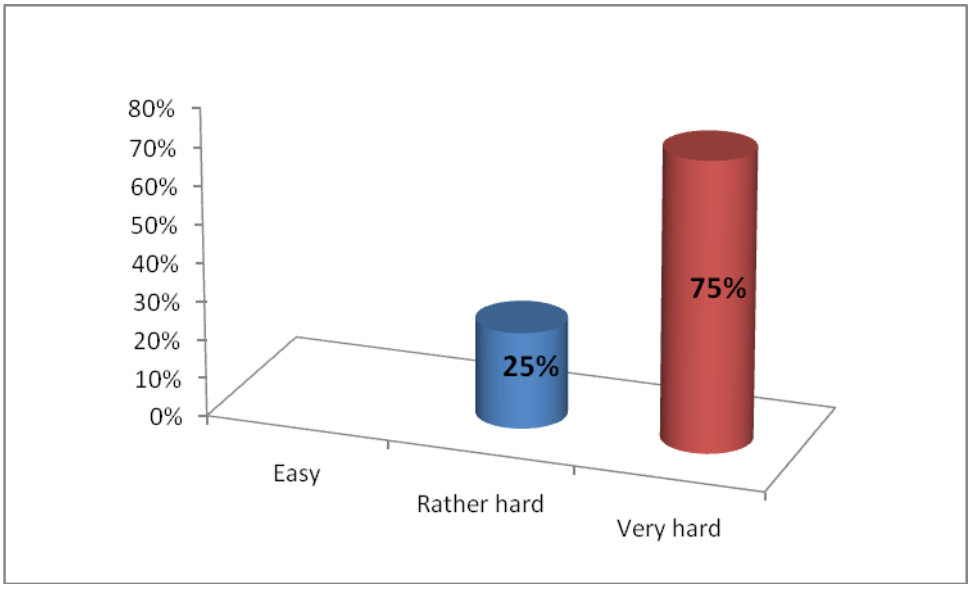

Figure 102-First steps in the app: Registration

The totality of seniors commented it is difficult to do the registration in the application, 25% mentioned rather hard and 75% very hard. Their biggest problem how to use the internet on the mobile and that the changing between the application and the browser was also very hard for them.

1.6.3-Signing in

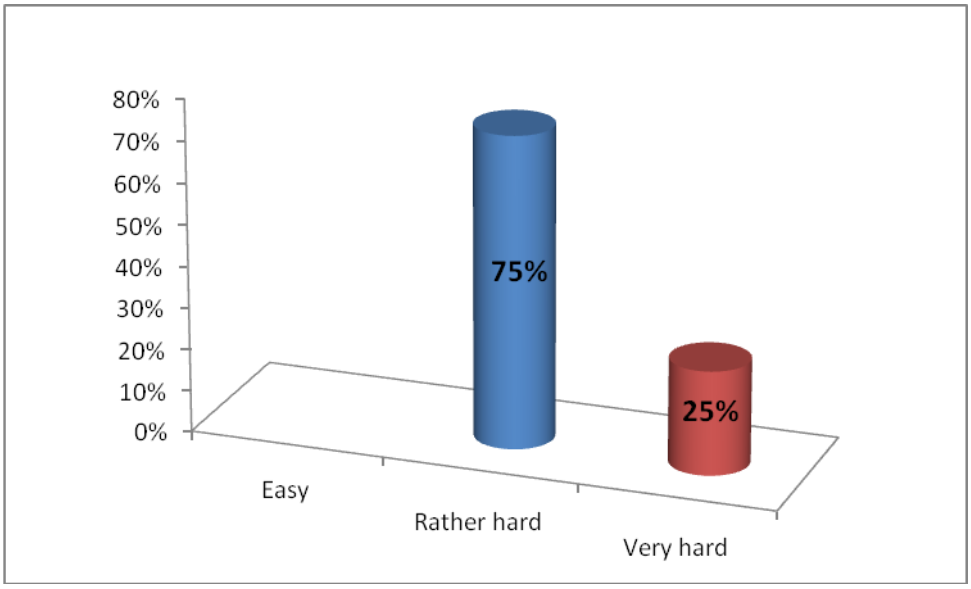

Figure 103-First steps in the app: Signing in

Even if 75% of the seniors said that to sign in the application is rather hard75% and 25% said that it is very hard after knowing their computer skills and the result about the registration it is a better result than the others'.

1.7-Enter a departure, destination

1.7.1-Usability

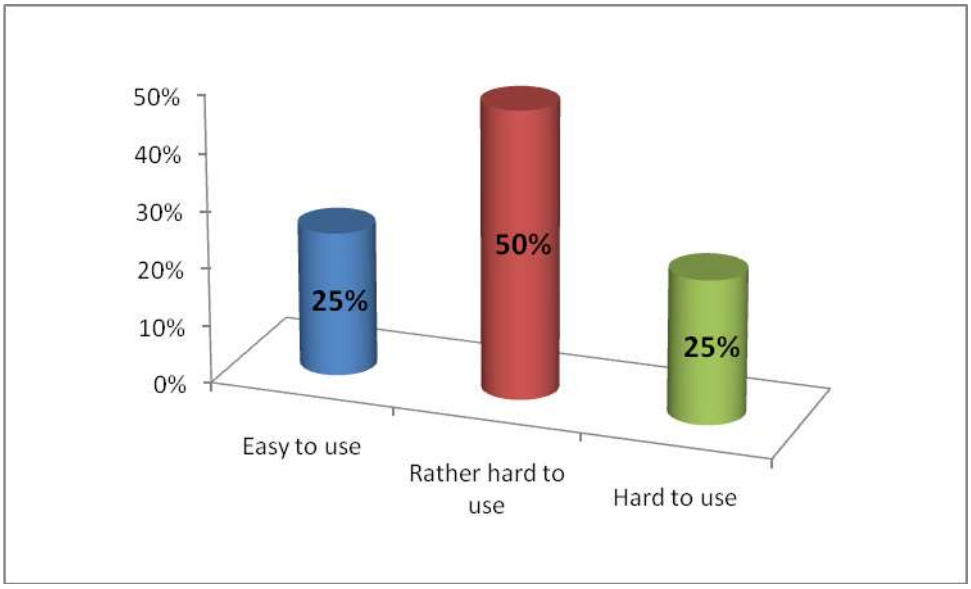

Figure 104-Enter a departure, destination: Usability

In general way the seniors considered difficult to introduce a departure or a destination in the application, 50% commented rather hard to use it and 25% commented hard to use it.An other 25% said that it is easy to use but they also had difficulties with typing the departure or destination.

The main reasons mentioned by the users were:

- Font size is very small in the Departure/ Destination text inputand in the message texts.
- It is necessary to include the complete name of the street and it is difficult to see the overall content in the text table (departure or destination).
- Some errors in the name of Tököl zones: some street like Dunautca – where the SMIMO is located – belongs to Szigetszentmiklós on the map even if it officially belongs to Tököl.
- In some cases appeared streets from other cities and countries.
- Difficult to write in mobile touch screen.

1.7.2-Changing of them

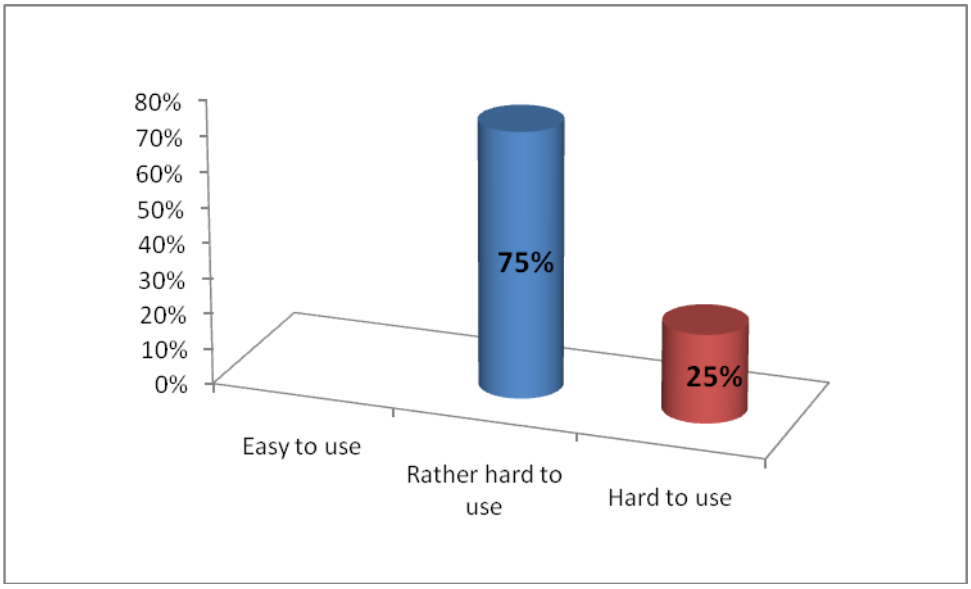

Figure 105-Enter a departure, destination: Changing of them

Seniors considered difficult to do changes in the application by the same reasons in previous point (1.7.1). 75% commented rather to do and 25% hard.

1.7.3-The way how they appear colors on the map is..

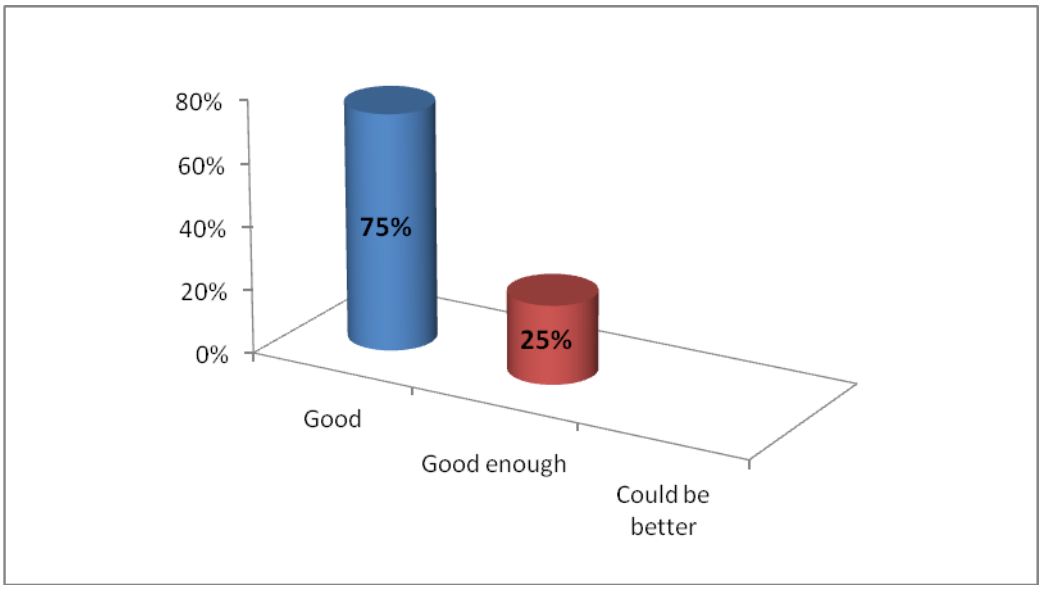

Figure 106-Enter a departure, destination: The way how they appear colors on the map is..

The most part of seniors are agreed with the way of how appear the colors on the map. 75% said good and only one fourth said good enough.

1.7.4-The way how they appears size on the map is..

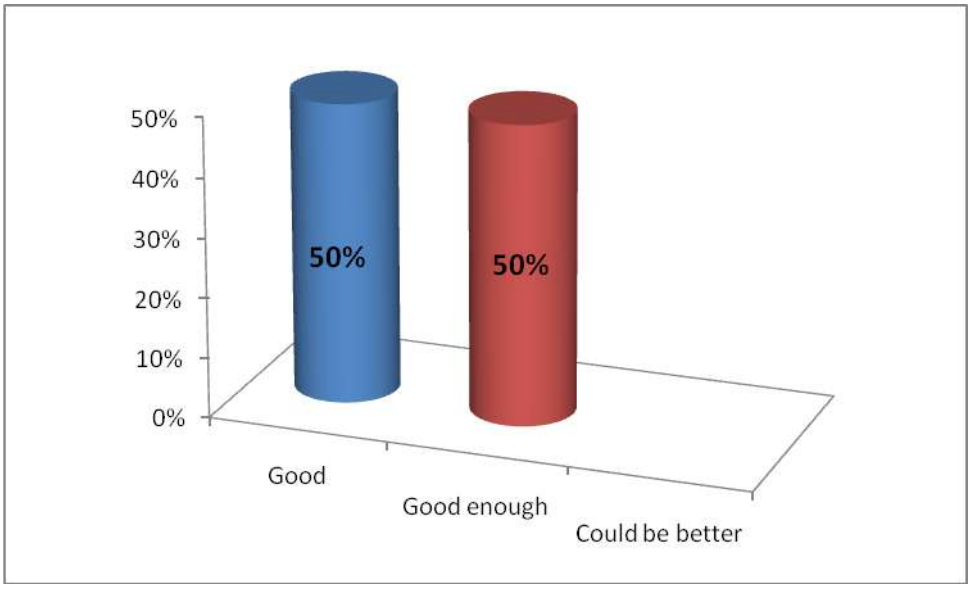

Figure 107-Enter a departure, destination: The way how they appear size on the map is…

In case of the way how they appear size on map 50% of seniors commented it is good and 50% considered good enough. Seniors suggested it would be better if the zoom for the map would be available after the route is plannedand also when the route beginning.

1.8-Route

1.8.1-The way how it appears colors in the map is…

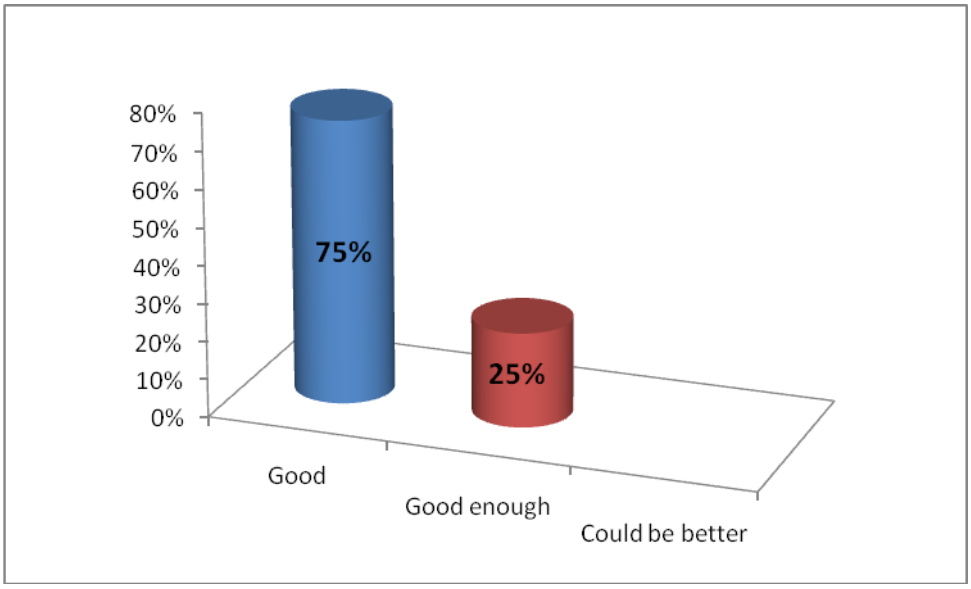

Figure 108-Route: The way how it appears colors in the map is..

75% of the seniors who tested the application considered the colors in the map good when the route is in course. 25% of the questioned people said it is good enough.

1.8.2-The way how it appears size in the map is…

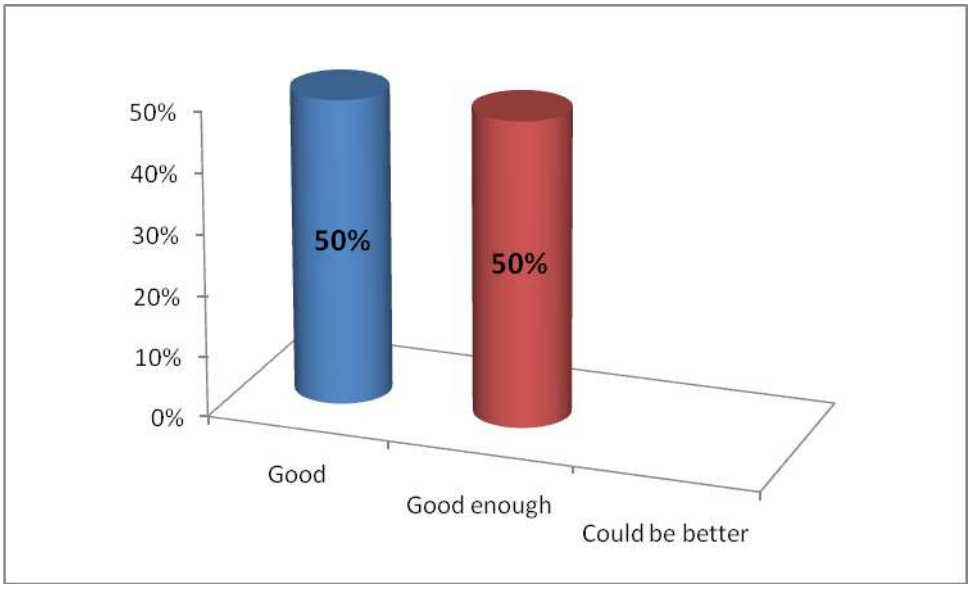

Figure 109-Route:The way how it appears size on the map is ..

When the route is in 50-50% of seniors considered the way how it appears size on the map is good or enough good. They just were complaining about that the name of the streets are not so readable because of the small font size.

1.8.3-If you want to change the route to do it is…..?

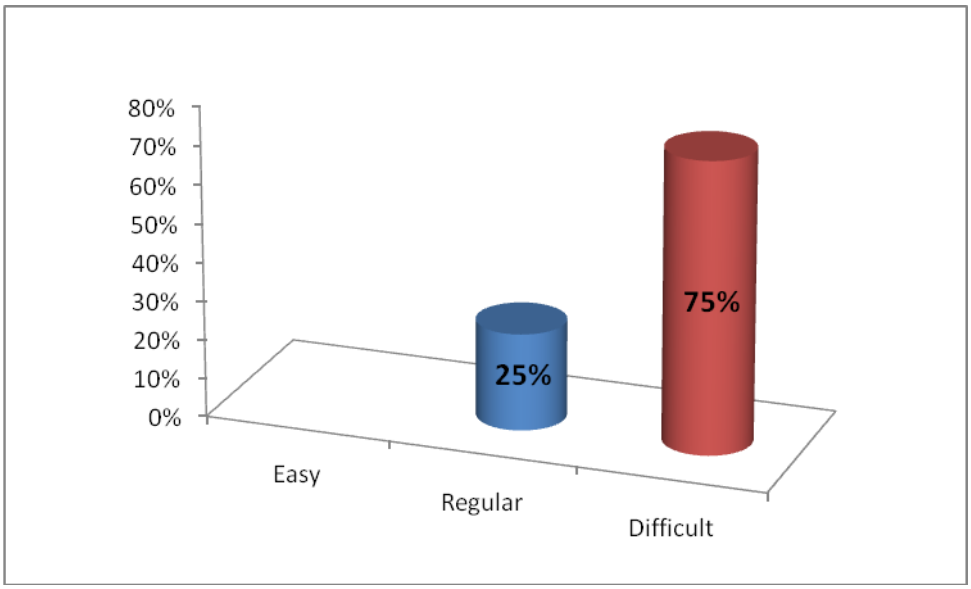

Figure 110-Route:If you want to change the route to do it is…?

Changing the route got out as a difficult task doing on the mobile app. 75% of the seniors think that it is difficult and 25% that it is regular. The hardest thing in changing the route for them was to type the departure or destination point again.

1.8.4-The color of arrows showed are…

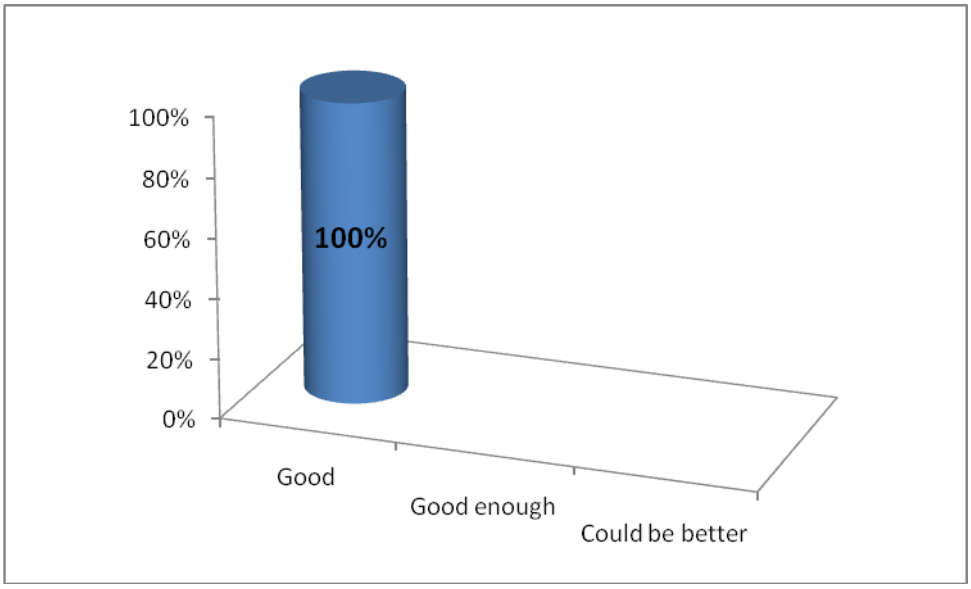

Figure 111-Route:The color of arrows showed are..

The 100% of seniors considered the color arrows are good, but the many of them mentioned that the area around the word could be bigger. Sometimes the text appeared in English (in route indications). They also liked the colors of the transportations even if all of them complained that for them tram is usually yellow because most of the trams are yellow in Hungary.

1.8.5-The meanings of the arrows showed are…..

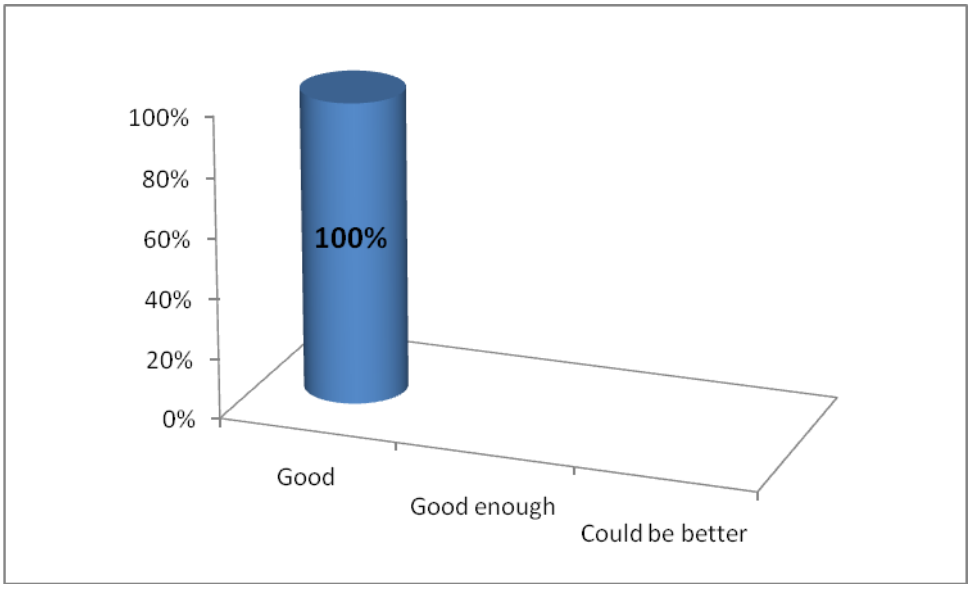

Figure 112-Route: The meanings of the arrows showed are…

Also 100% considered that the meaning of the arrows aregood

1.9-Screen

1.9.1-Images and letters

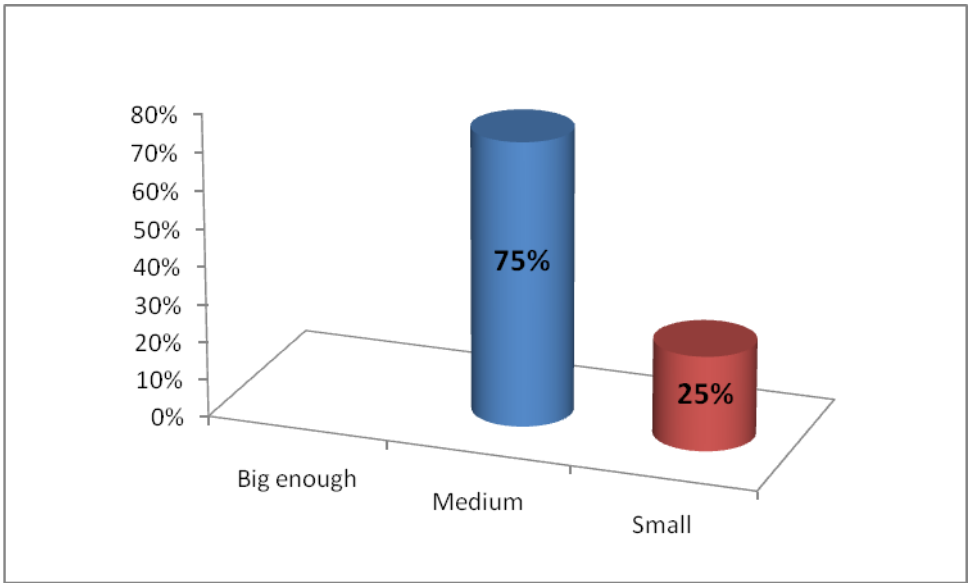

Figure 113-Screen: Images and letters

In general way the seniors commented the images and letters must be bigger. All the seniors had to wear a glass. And even if they could see the images better they told that the letters must be bigger because it is hard to see.

1.9.2-The font type is….

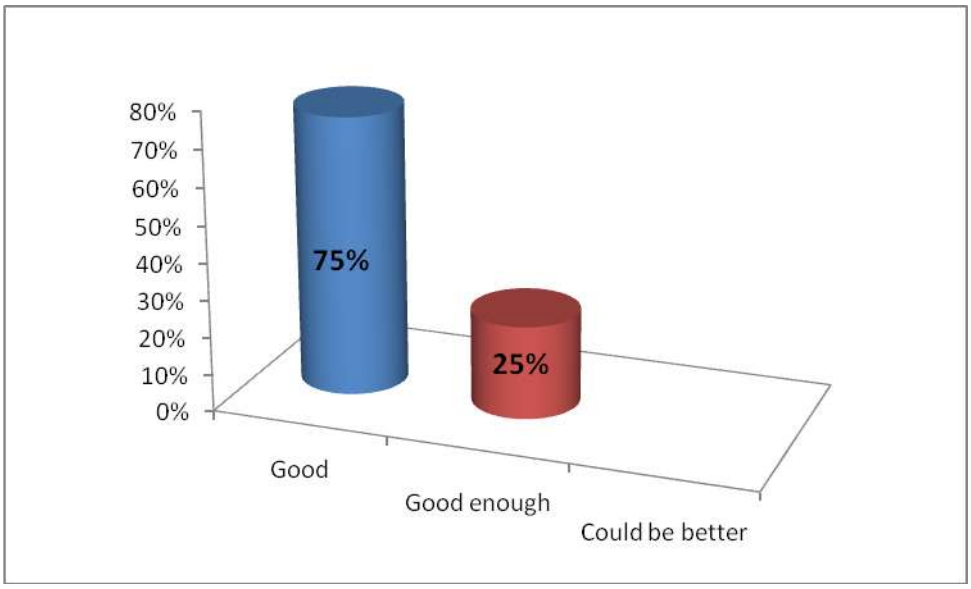

Figure 114-Screen: The font type is…

Because the question was about the font type,75% considered good, 25% considered good. But again all of them recommended having bigger letters.

1.9.3-Brightness of the screen is…

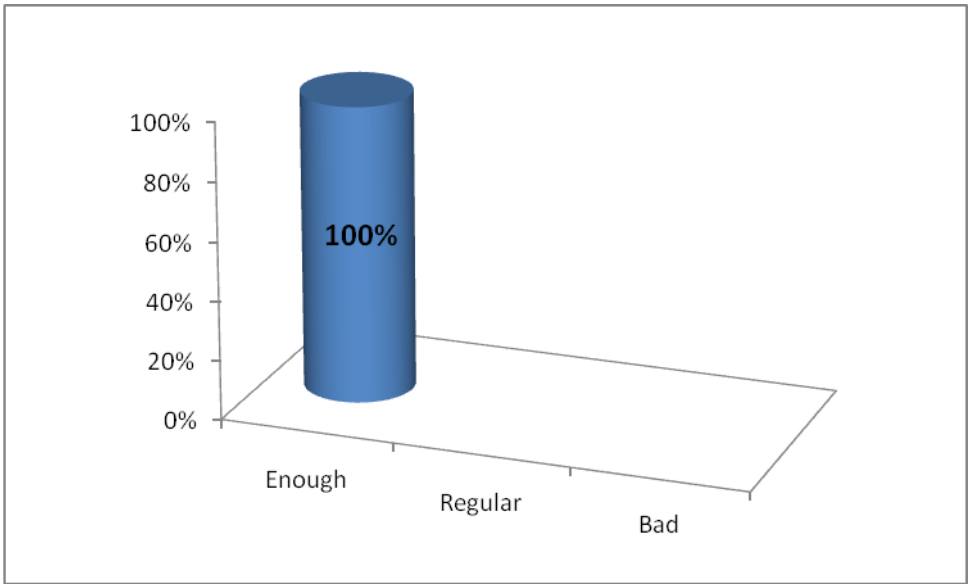

Figure 115-Screen: Brightness of the screen is….

The tests were taken inside the building so the sun didn't disturb them in seeing the app. In this case they didn't have any problem with the brightness of the screen, 100% of the seniors said that it is enough.

1.9.4-The information on the sites are….

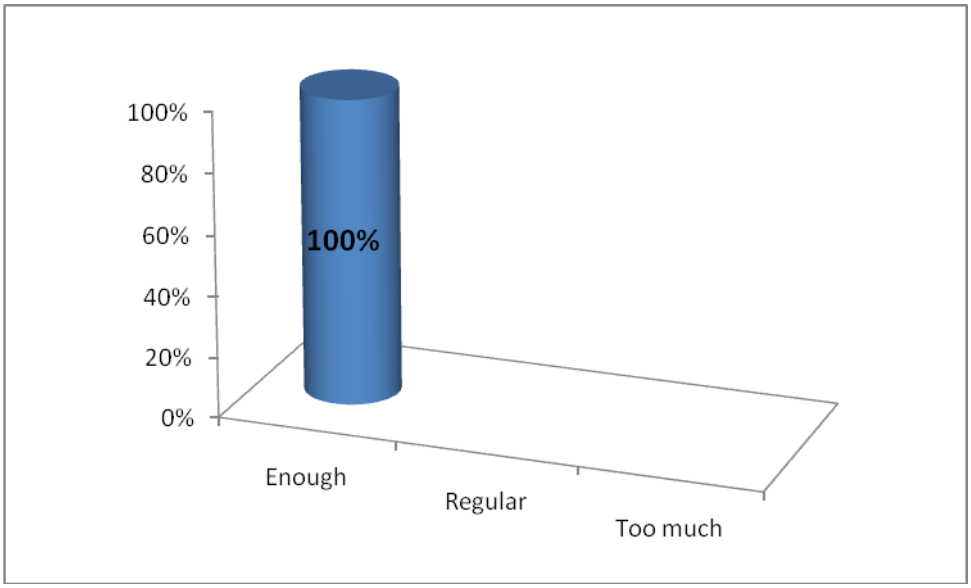

Figure 116-Screen: The information on the sites are…

100% of seniors considered enough the information on. They didn't think that the pages are overcrowded with full of the information.

1.10- POI's

1.10.1- Your profile settings and POI's showed to you…?

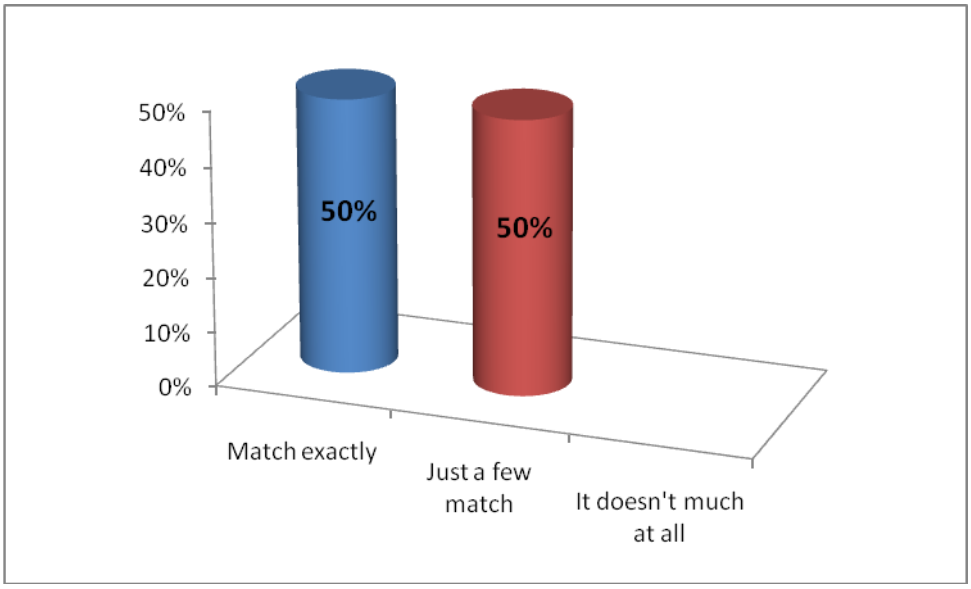

Figure 117-POI's: Your profile settings and POI's showed to you…?

In case of POI's showed 50-50% of seniors considered match exactly or that just a few matches.

1.10.2-POI's simbology is understable…?

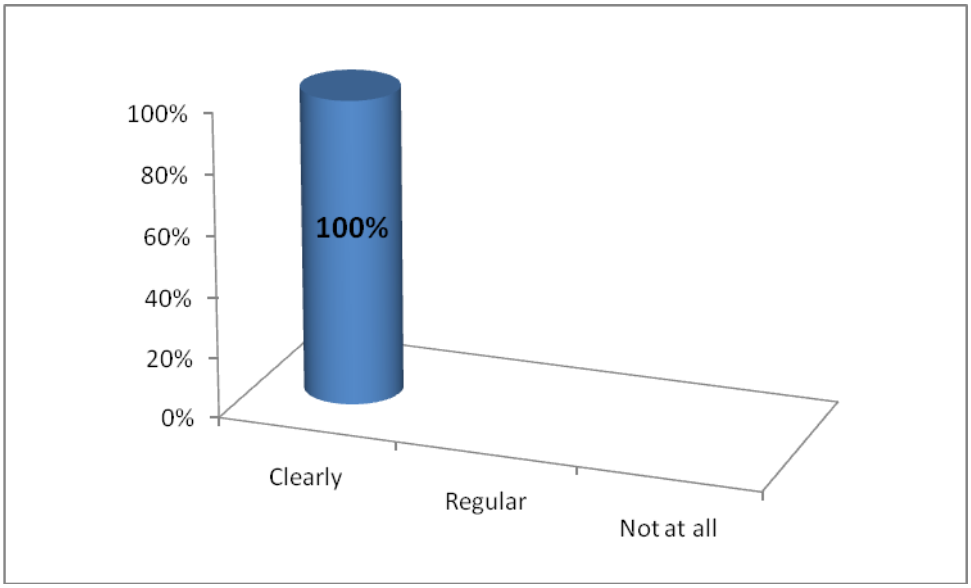

Figure 118-POI's:POI's simbology is understandable…?

All of the seniors considered the POI's simbologyis clearly. They told that having PoIs are really useful.

1.10.3-POI's showed along the route are….?

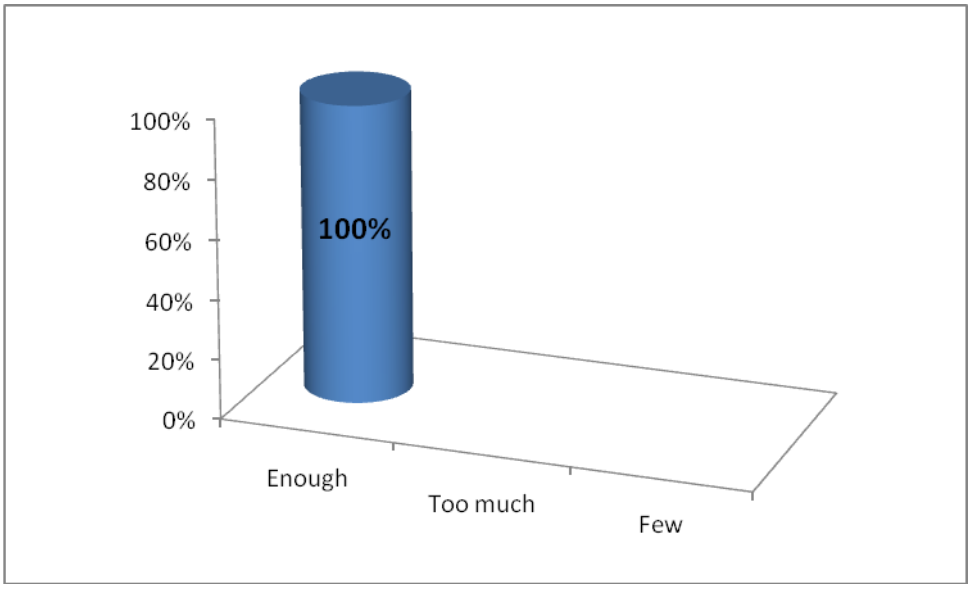

Figure 119-POI's: POI's showed along the route are…?

Relating the POI's showed along the route 100% of users commented were enough. They were just talking about that having a much longer way because of a farer POI is maybe not the best.

1.11-Suggestions:

- Use a different procedure in registration;the seniors considered difficult the actual procedure, the most part of them don't have e-mail address. They suggest the registration by sms.
- Seniors suggested will be better if the zoom on the map will be available after the route was planned.
- Seniors suggested that the letters could be bigger.It was very difficult for the seniors to read the text including using their glasses.
- Seniors recommend to have bigger text input for the destination and departure, intermediate point because it was too small for them.
- They suggested to have the possibility to choose street names, places just from that city, village where they are.
- Make the translations of some English commands.

Conclusions:

The main reasons mentioned by the users were:

- Difficulties in the registration procedure.
- Small letters.
- Difficult to write in mobile touch screen.
- It is necessary to have better computer and mobile skills to use the app.
- In the departure and destination address it is necessary to include the complete name of the street and it is difficult to see it the overall text content in the text table (departure or destination).
- In some cases appeared streets from other cities and countries.
- The most part of users mentioned the arrows must be bigger as well the text in above command. Sometimes the text appeared in English (in route indications).
- Some seniors commented that even if the POIs are good and helpful they are afraid that using the POIs gives them a much longer route by walking.
- When the mobile turn the letters in the menu overlap.
- Using the intermediate point is useful but with using that some seniors told that the page will get overcrowded.

2-Web tests

The web tests were hold at the BZN because in Tököl most of the people do not have or not use any computer. In this case we asked two elderworkers at the BZN in the age 66 and 54 years old to do the usability test on the 8th of July. They are well expert in using computer and internet and didn't need any help in using the WayFiS web application and in filling the usability questionnaire.

Image 35-Wayfis Usability Tests (Hungary)

USABILITY QUESTIONNAIRE	
Data	
Name	
Age	
Gender	☐ Male 100% ☐ female0%
Place of residence	☐ Big city (over 500 thousand) 100% ☐ medium sized city (100-500 thousand) ☐ small town (10-100 thousand) ☐ village
Level of education	☐ No education/primary school ☐ Secondary school ☐ College (diploma) 50% ☐ University 50%
Current employment status	☐ Free lancer ☐ Employee ☐ Civil servant 50% ☐ Labourer ☐ Housewife/-man ☐ Retired 50% ☐ other_____
Computer skills	☐ Very high ☐ Rather high100% ☐ Rather low ☐ Very low ☐ Non

First steps in the app	Time to switch on ☐ 1secons-10 seconds100% ☐ 10- 20 seconds ☐ 20 -30 seconds ☐ More than 30 seconds
	Registration ☐ Easy 100% ☐ Rather hard ☐ Very hard, because
	Signing in ☐ Easy 100% ☐ Rather Hard ☐ Very hard, because ……
Enter a departure, destination	Usability ☐ Easy to use 100% ☐ rather hard to use ☐ hard to use, because ……
	Changing of them ☐ Easy 100% ☐ Rather hard to do ☐ Hard, because ……
	The way how they appear color on the map is (web) ☐ Good50% ☐ Good enough50% ☐ Could be better, like ……

	The way how they appear size on the map is(web only) ☐ Good50% ☐ Good enough ☐ Could be better, like …… 50%
Route	The way how it appear color on the map is ☐ Good 100% ☐ Good enough ☐ Could be better, like ……
	The way how it appear size in the map is ☐ Good 100% ☐ Good enough ☐ Could be better, like…….
	If you want to change the route to do it is….? ☐ Easy 100% ☐ Regular ☐ Difficult, because……
	The color of the arrows showed are… ☐ Good 100% ☐ Good enough ☐ Could be better, like …
	The meanings of the arrows showed are… ☐ Good50% ☐ Good enough 50% ☐ Could be better, like ……

Screen	Images and letters are… ☐ Big enough ☐ Medium ☐ Small	100%
	The font type is ……. ☐ Good ☐ Good enough ☐ Could be better, like …	100%
	Brightness of the screen is…(mobile) ☐ Enough ☐ Regular ☐ Bad	
	The information on the sites are ☐ Enough ☐ Regular ☐ Too much	100%
POI's (No POI's available on web application)	Your profile settings and the POI's showed to you…? ☐ Match exactly ☐ Just a few match ☐ It doesn't match at all	
	POI's simbology is understable…? ☐ Clearly ☐ Regular ☐ Not at all	
	POI's Showed along the route are…? ☐ Enough ☐ Too much	

	☐ Few
Suggestions	Please feel free to share your opinion about the route planner

Table 11-Wayfis Usability tests results (Webapplicaton)

2.1 Gender

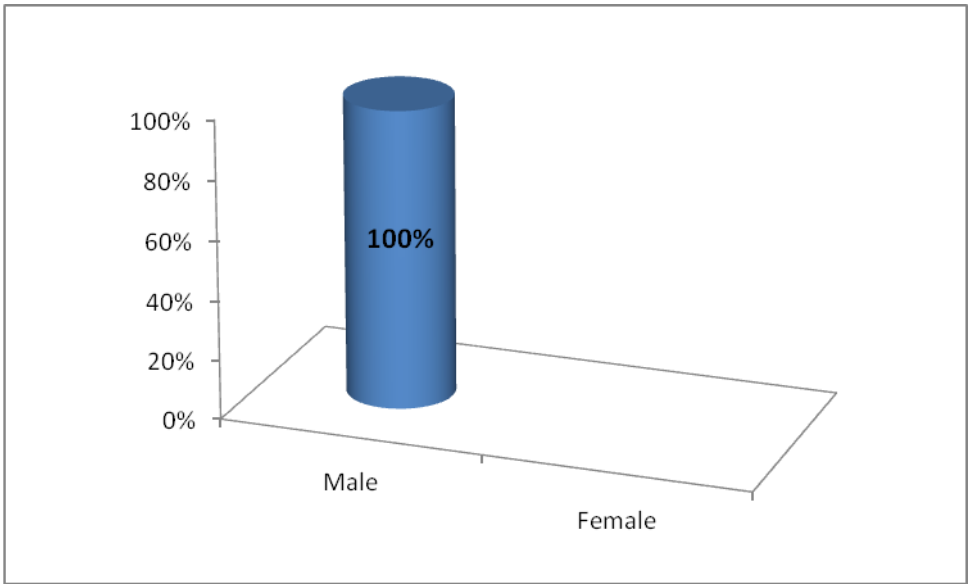

Figure 120-Gender

The tested were done by2 seniors 100% men.

2.2-Place of Residence

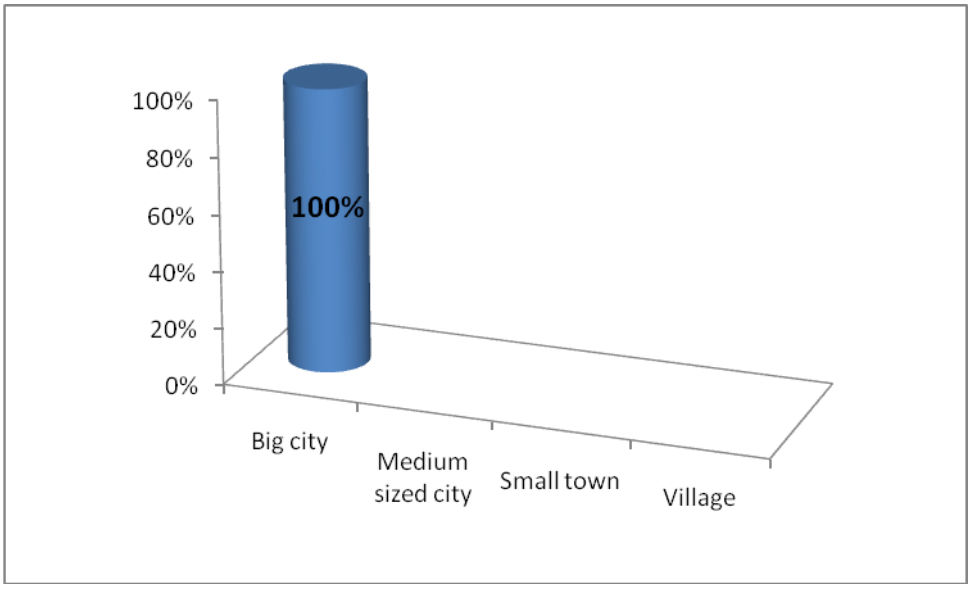

Figure 121-Place of Residence

100% of users tested have their place of residence in Budapest which is a big sized city.

2.3-Level of Education

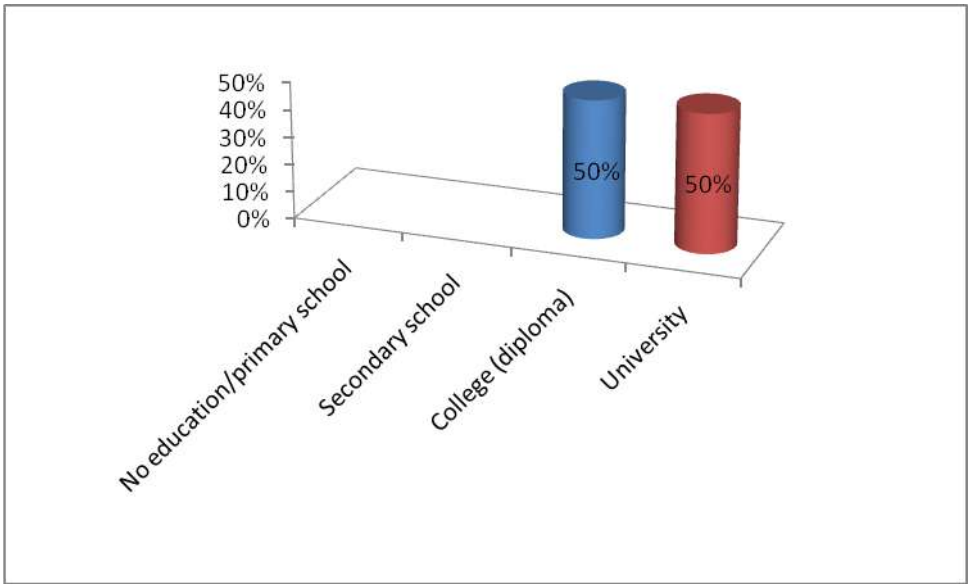

Figure 122-Level of education

Concerning level of education of seniors tested 50% had university degree and 50% finished the college and having a diploma.

2.4-Current employment status

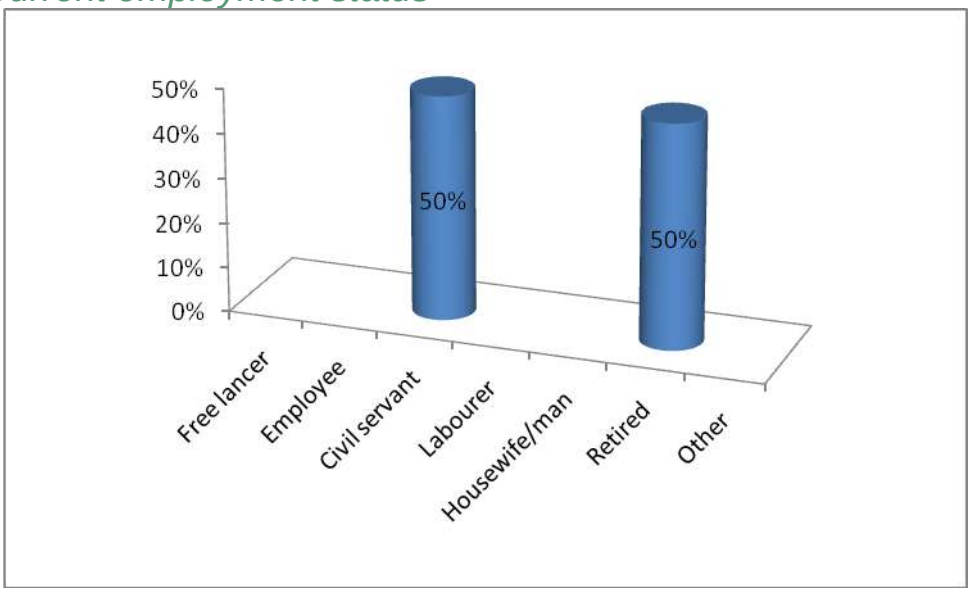

Figure 123-Current employment status

Because the test was taken by two workers at the BZN, the result that one of them works as a civil servant and the other works as a retired man was not surprising.

2.5-Computer skills

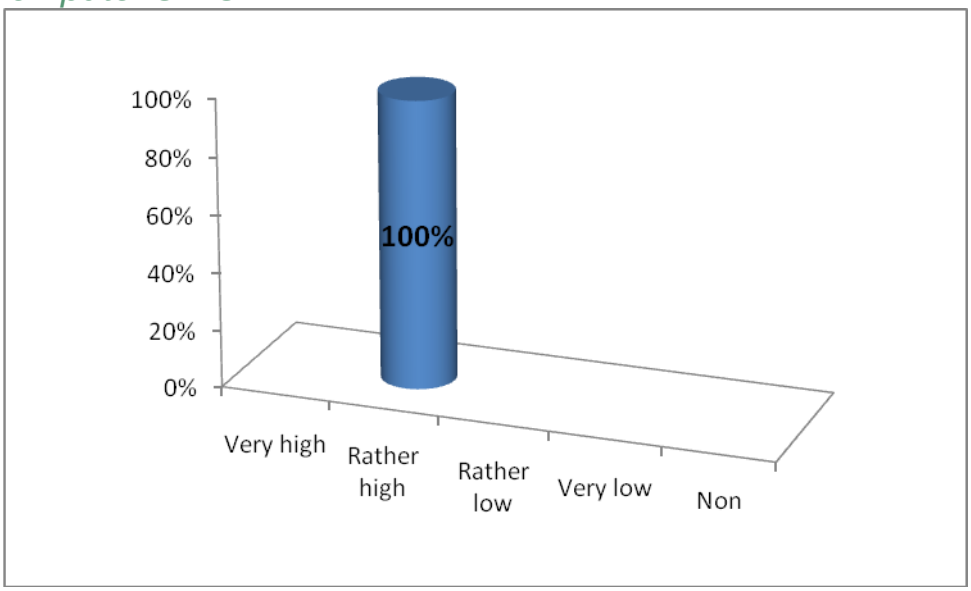

Figure 124-Computer skills

Even seniors at the BZN work with computer every day they considered their computer skills rather high than very high. But concerning a general user they had very high computer skills.

2.6-First steps in the app

2.6.1-Time to switch on

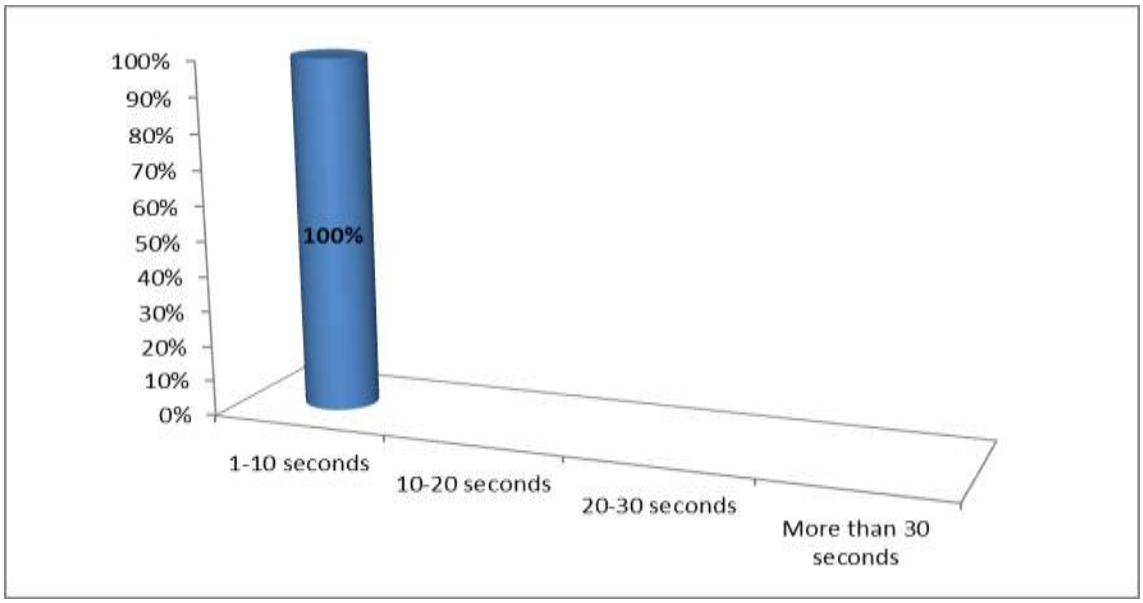

Figure 125-First steps in the app: Time to switch on

The totality of seniors tested considered switching on the web application very quick and easy.

2.6.2-Registration

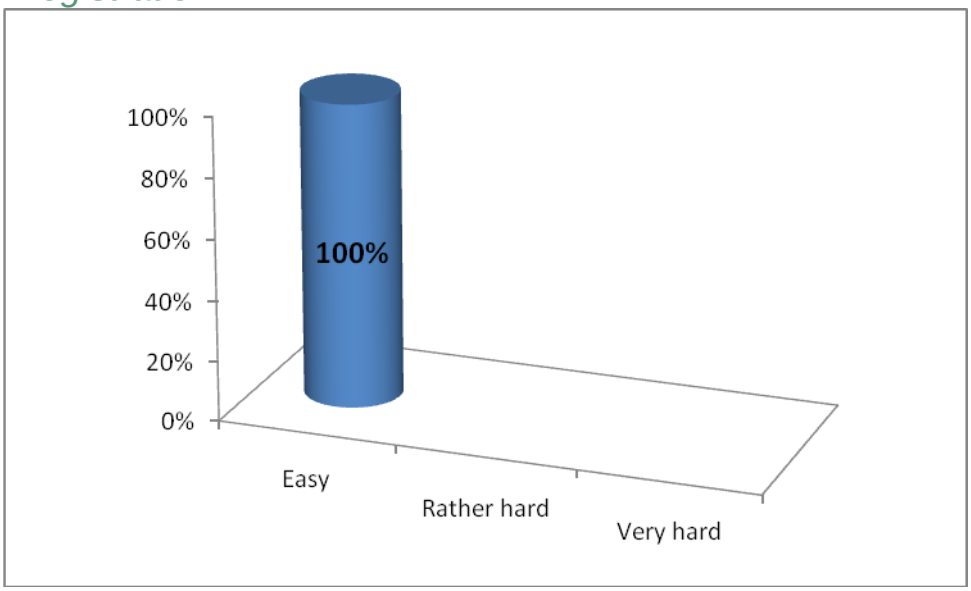

Figure 126-First steps in the app: Registration

After knowing the knowledge and the background of the seniors at the BZN it is relevant that they found making the registration easy. They didn't have any problem with them.

2.6.3-Signing in

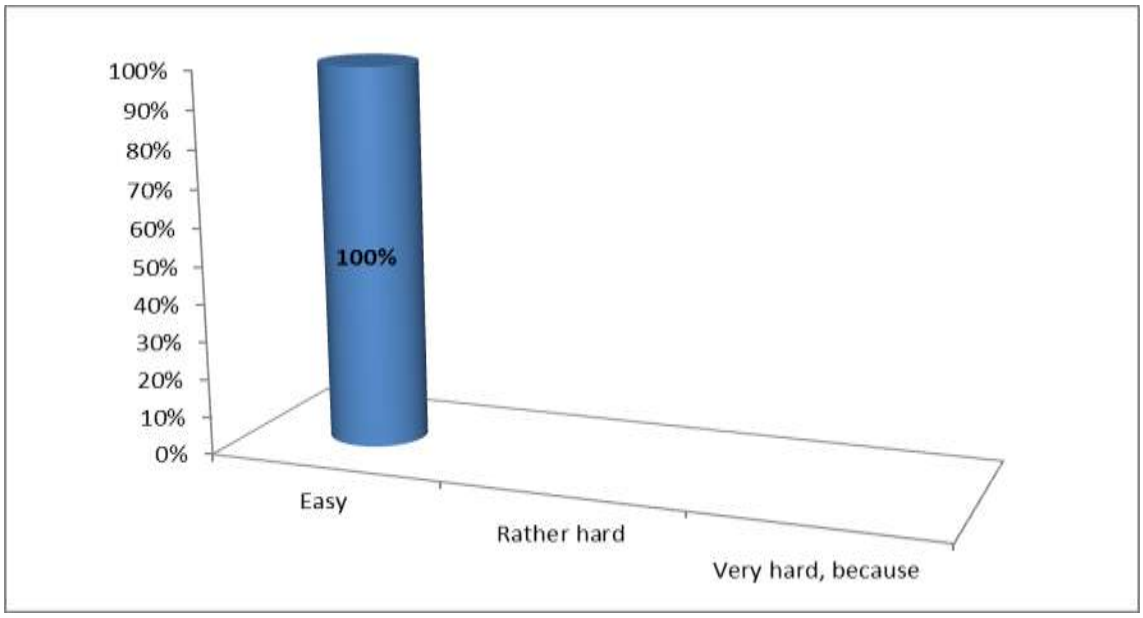

Figure 127-First steps in the app: Signing in

About the signing in web application they considered easy and quick after received their passwords.

2.7-Enter a departure, destination

2.7.1-Usability

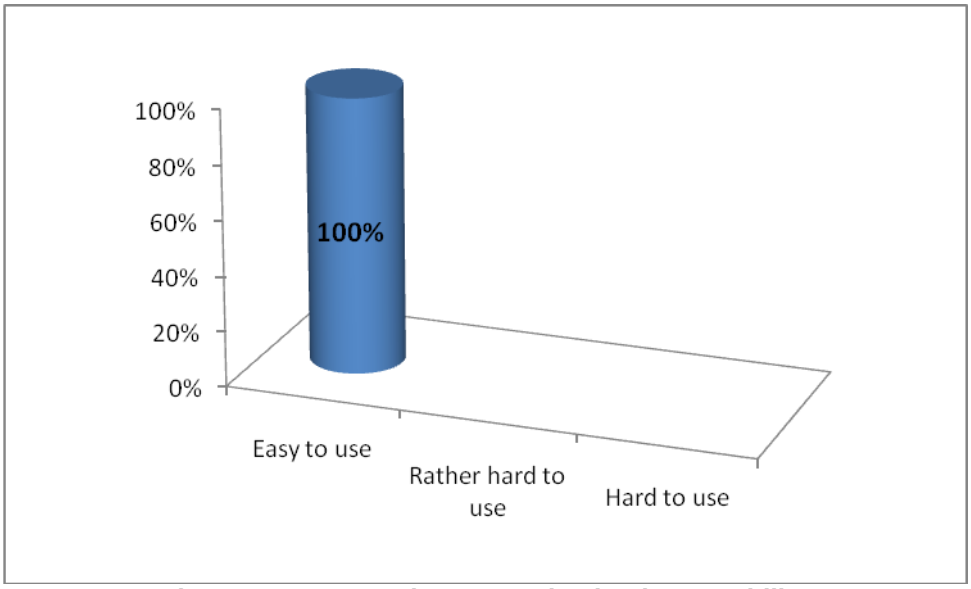

Figure 128-Enter a departure, destination: Usability

Concerning the use of web app 100% of users considered that it is easy to use even if they faced some errors like not finding the street on the map.

2.7.2-Changing of them

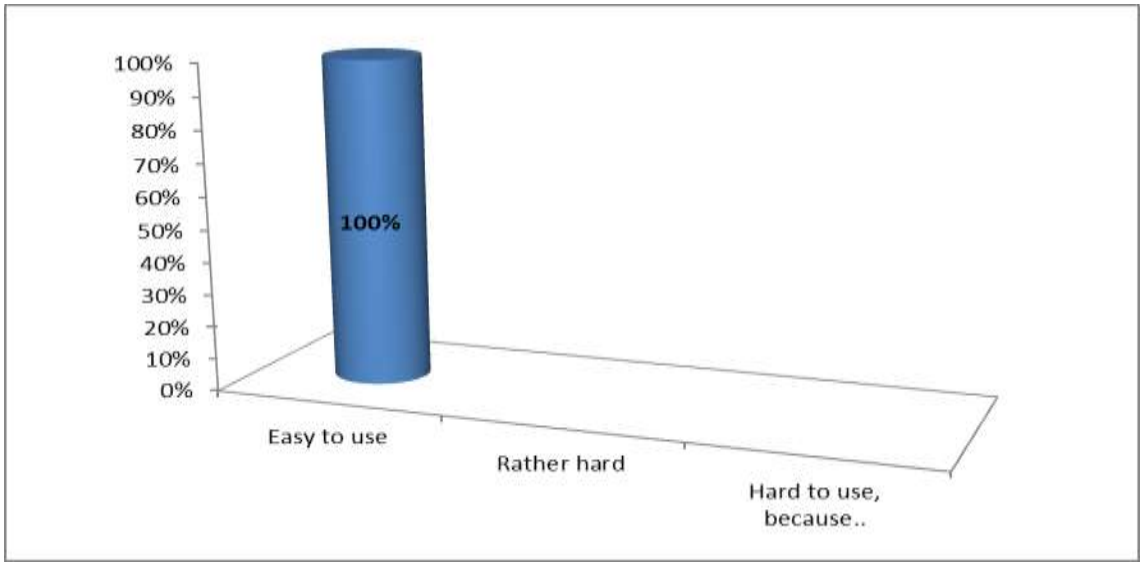

Figure 129-Enter a departure, destination: Changing of them

Seniors tested considered easy to change the routes, but they mentioned that the missing translated words can be disturbing. But because they know English very well for them it was not a problem.

2.7.3-The way how they appear colors on the map is..

This question located in this part of questionnaire is destined only for mobile application test, in case of web application this question is answered in point 2.8.1.

2.7.4-The way how they appears size on the map is..

This question located in this part of questionnaire is destined only for mobile application test, in case of web application this question is answered in point 2.8.2.

2.8-Route

2.8.1-The way how it appears colors in the map is.

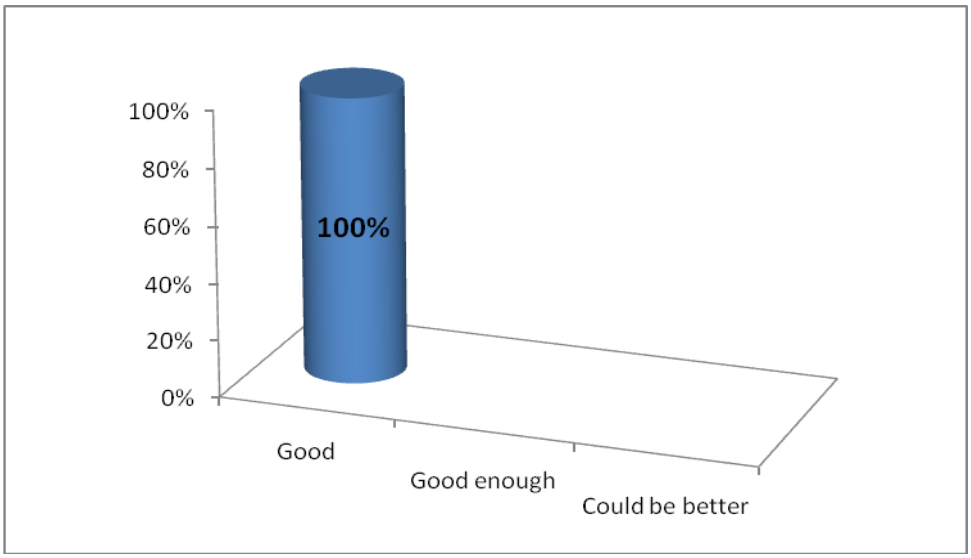

Figure 130-Route: The way how it appears colors in the map is..

All of the seniors considered that colors in the maps are good and harmonic, good to see.

2.8.2-The way how it appears size in the map is…

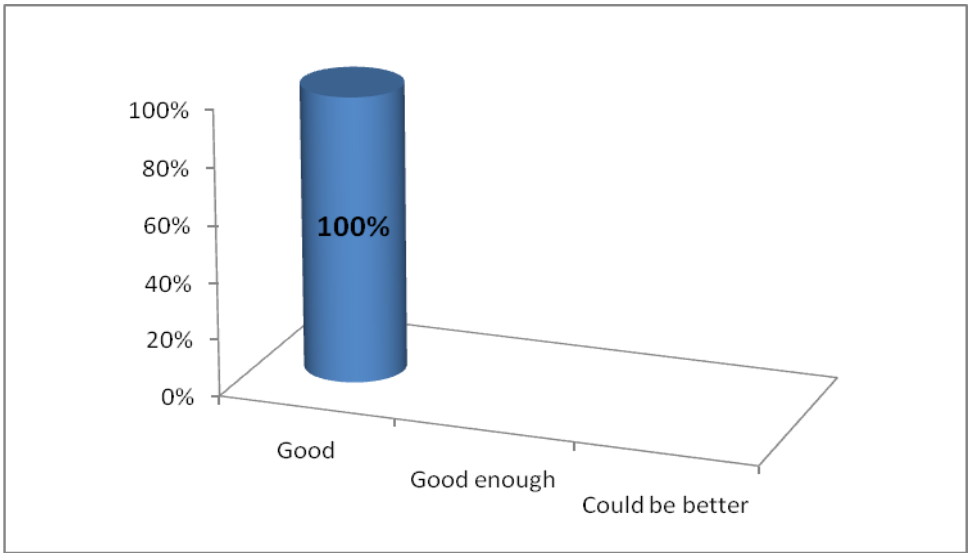

Figure 131-Route: The way how it appears size on the map is ..

Concerning the way how it appears size on the map 100% considered good. Seniors who took part in the evaluation have no visual problems.

2.8.3-If you want to change the route to do it is…..?

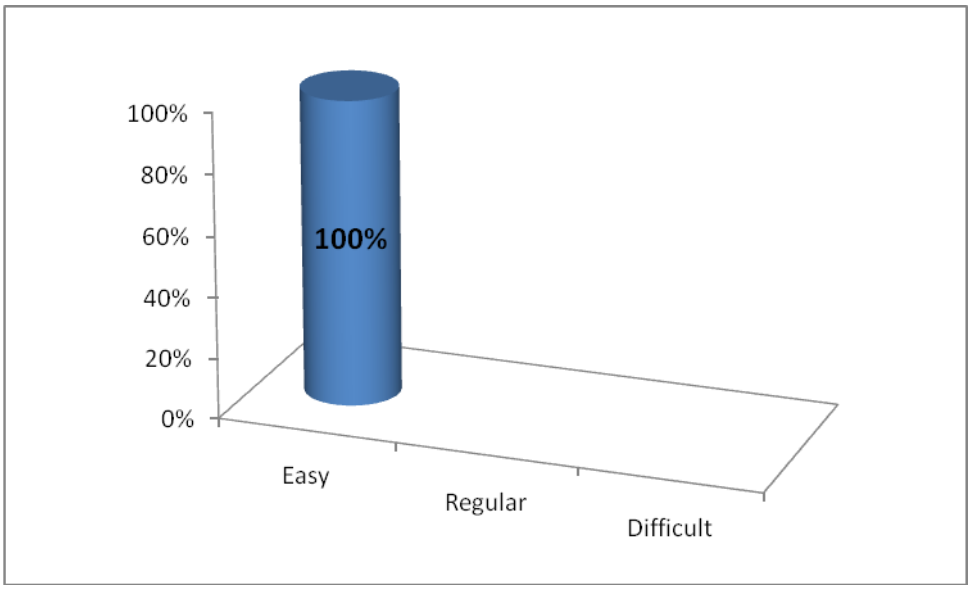

Figure 132-Route: If you want to change the route to do it is…?

Changing the route came out as an easy task for the seniors working at the BZN.

2.8.4-The color of arrows showed are…

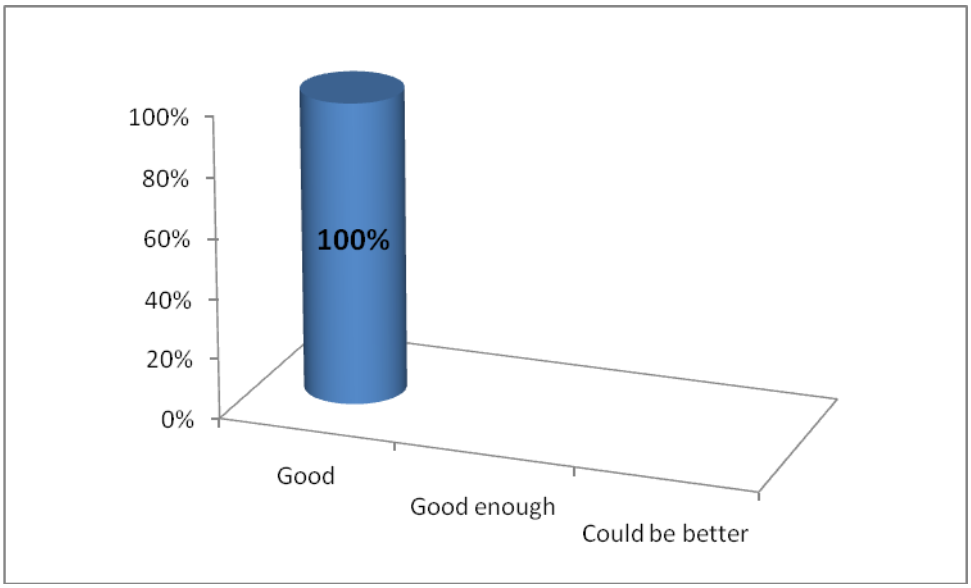

Figure 133-Route: The color of arrows showed are..

100% of seniors tested considered colors of arrows in route planner is good. They like the blue for walking, red for underground. They liked the other colors, too even if for the the tram using the yellow color is more typical.

2.8.5-The meanings of the arrows showed are…..

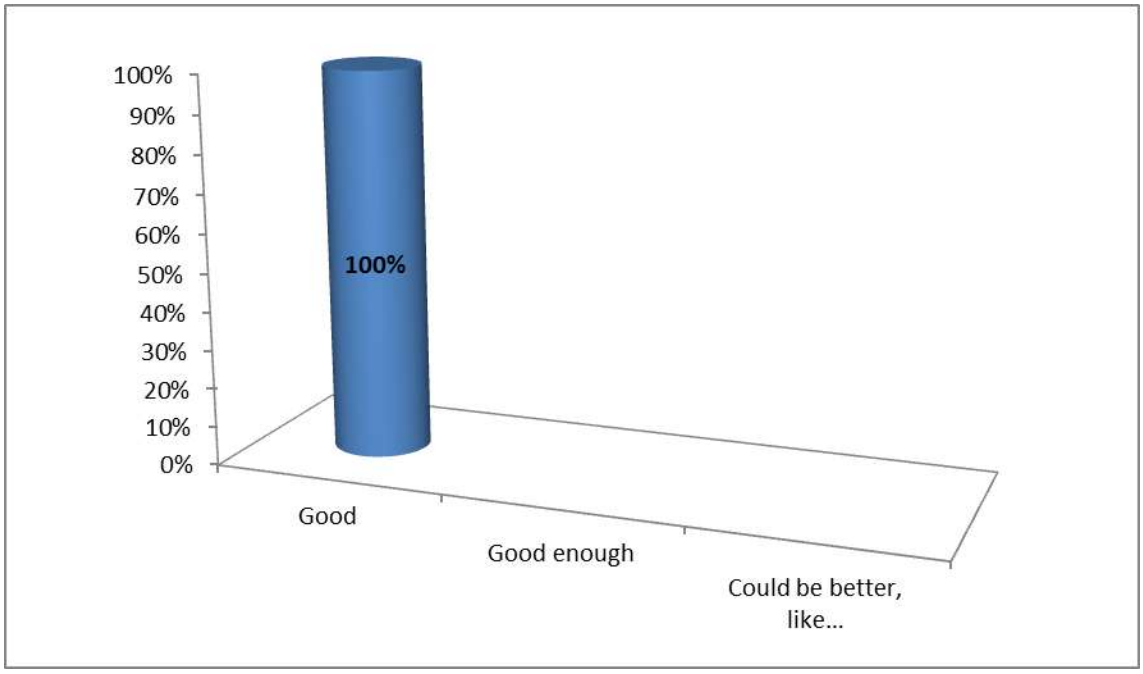

Figure 134-Route: The meanings of the arrows showed are…

For all the totality of the seniors the meanings of the arrows are clear.

2.9-Screen

2.9.1-Images and letters

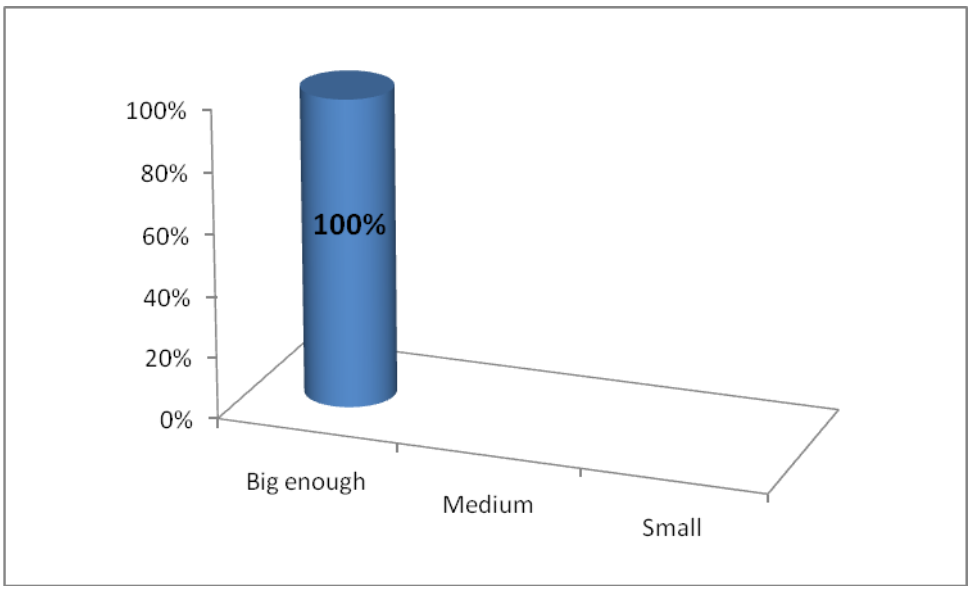

Figure 135-Screen: Images and letters

How it was mentioned even if both of the seniors are using a glass for reading concerning the images and letters they were satisfied with the size of the images and letters. But they were complaining about others that for other elderlies it can be maybe too small.

2.9.2-The font type is….

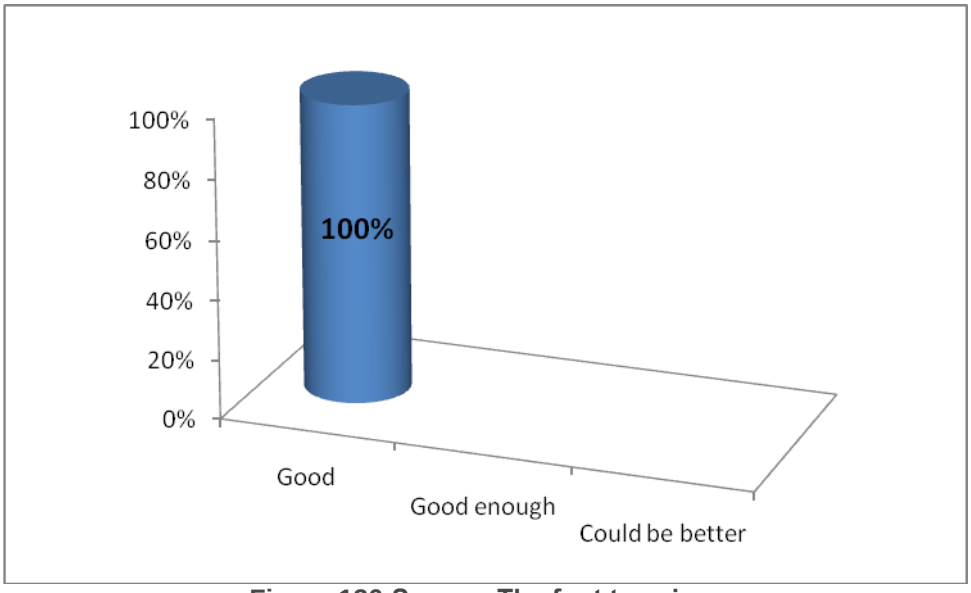

Figure 136-Screen: The font type is…

100% of seniors considered font type should not be improved so that it is good to read. They told me that even if for some elderlies the size of the letters would be maybe small the font type is good, it can be readable.

2.9.3-Brightness of the screen is…

This question was designed only for mobile application tests.

2.9.4-The information on the sites are….

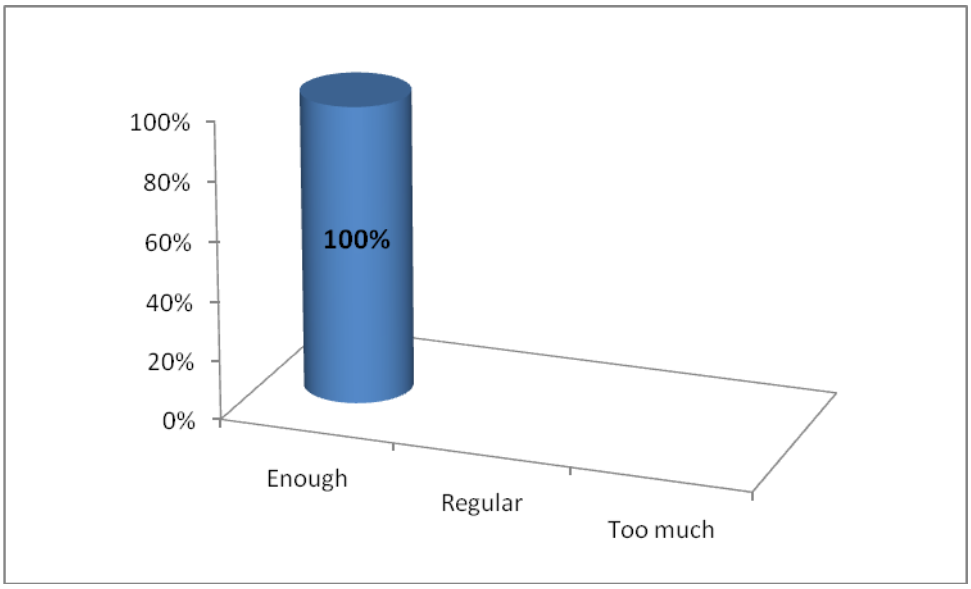

Figure 137-Screen: The information on the sites are…

In the map and route planner they considered the information showed is enough. They liked that the website is not overcrowded and it was easy and simple to use.

2.10- POI's (mobile)

This question was designed by mobile application tests there aren't available POI's in web application.

2.11-Suggestions

- There are some missing translations, some words appears in English.
- They liked the colors but the yellow color for the tram for all of them is more natural as the trams in Hungary are usually yellow.
- Even if they were able to read the letters and see the images they were complaining that for other seniors they think it would be a little bit too small.
- They suggested to have the "Route plan!" button in the middle with the orange background photo.

Conclusions

- The registration procedure is easy.
- They told that the missing translations, words in English can be disturbing.
- They commented it is quick entering in the web application.
- Seniors considered very useful "change departure-destination button"
- They found the intermediate point very useful.
- They considered the web application could be better in terms of font and colors.
- Some street could not be found.
- The route which was planned by the WayFiS was OK, but they were talking about different routes too, what the application did not shown for them.

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PROJECT Nº: AAL-2010-3- 014

Mobility Test Results (1st Phase) Hungary

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1. Mobility tests by walking - Hungarian Results

Mobility tests only by walking were done by the SMIMO in collaboration with the elderlies living there. SMIMO is located in Tökül which a very small city 20 kilometers far from Budapest. The city has no public transport system so the tests what we could do for the first round were taken only by walking in Tökül and in Ráckeve which is another small city not so far from Tökül. I could come with 2 elderly to Budapest, Csepel too, but there we were also just walking. The totally 31 tests took place from 23th of July to 1st August 2013 and participated 10 seniors with age between 58 and 82 years old. Initially a deep explanation was given about WayFiS mobile application and its functionalities. After those they started to try to use the mobiles but only 1 one of them could plane his route by himself alone. All of the others needed help which was understandable because they just have seen smartphones during the design or the usability tests so the use of the Smartphone was really hard for them. We always stopped for at least 20-30 minutes to make everybody's smartphone ready for the tests. Sometimes it was very hard for them to check the application and remember for all the details at the end. So after planning the route and going on it we filled out the questionnaires during the stops in our way with the help me. In order to develop mobility tests it was used the WayFiS mobile application V9, and 4 smartphones with Android System: Samsung Galaxy SIII. Sometimes more seniors were taking part during the travelling than the number of people who were doing tests because the seniors at the SMIMO usually do not have the possibility to travel with a helper.

Image 36-Wayfis Mobility Tests (Hungary, Csepel)

Image 37-Wayfis Mobility Tests (Hungary, CSepel)

Image 38-Wayfis Mobility Tests (Hungary, Tököl)

Image39-Wayfis Mobility Tests (Hungary, Tököl)

TRAVEL QUESTIONNAIRE	
Date	
Name	
Age	
Gender	☐ Male 20% ☐ Female80%
Level of education	☐ No education/primary school 50% ☐ Secondary school 30% ☐ College (diploma) 10% ☐ University 10%
Current employment status	☐ Free lancer ☐ Employee ☐ Civil servant ☐ Labourer ☐ Housewife/-man ☐ Retired 100% ☐ other_____

Travel date	
Travel start time	
Origin	
Destination	
Reason for travel	
Transport used	☐ Walking 100% ☐ Bus ☐ Train ☐ Underground ☐ Tram ☐ Others….
Travel with:	☐ Alone ☐ Other Relatives ☐ Spouse or partner ☐ Some friends 100% ☐ Formal/Informal caregiver ☐ Others
Turn on the application	Time to switch on ☐ 1-10 seconds 10% ☐ 10- 20 seconds 6% ☐ 20 – 30 seconds 29% ☐ More than 30 seconds 55%
Finding a departure, intermediate, destination point in the system	Finding the actual position with the button ☐ Exactly 32% ☐ In the 5-10 meters 52% ☐ More than 10 meters 16% Finding the departure point by writing ☐ Exactly 65% ☐ In the 5-10 meters 32% ☐ More than 10 meters 3%

	Finding the departure point	
	☐ Exactly	55%
	☐ In the 5-10 meters	45%
	☐ More than 10 meters	
	Finding the intermediate point	
	☐ Exactly	68%
	☐ In the 5-10 meters	32%
	☐ More than 10 meters	
	No applicable	
	Finding the destination point	
	☐ Exactly	58%
	☐ In the 5-10 meters	42%
	☐ More than 10 meters	
	Accuracy regarding the departure, destination	
	☐ Exactly	48%
	☐ In the 5-10 meters	52%
	☐ More than 10 meters	
	Speed in founding the points	
	☐ 1secons-10 seconds	100%
	☐ 10- 20 seconds	
	☐ 20 – 30 seconds	
	☐ More than 30 seconds	
The planned route	The route planned by the app is understandable:	
	☐ Totally	71%
	☐ Mostly	29%
	☐ It could be better, like …..	

	The offered transports were correct ☐ Totally ☐ Mostly ☐ Not at all
	The time showed for the linked transport were correct ☐ Totally ☐ Mostly ☐ Not at all
	The appeared commands during the route are…. ☐ Helpful, understandable… 23% ☐ Regular 55% ☐ Bad 22%
	Changing between routes is ☐ Clearly 3% ☐ Regular 32% ☐ Bad 65% New route not found
	Images and letters during the route are… ☐ Big enough 16% ☐ Medium45% ☐ Small 39%
	Speed changing between routes is ☐ 1secons-10 seconds 3% ☐ 10- 20 seconds 16% ☐ 20 – 30 seconds 23% ☐ More than 30 seconds 58%

	☐ New route not found
Screen	Brightness of the screen is… ☐ Enough 71% ☐ Regular 29% ☐ Bad
POI's	POI's simbology is understable…? ☐ Clearly 68% ☐ Regular 32% ☐ Bad No POI's available
	During your trip your profile settings and the POI's showed to you…? ☐ Match exactly 35% ☐ Just a few match 39% It doesn't match at all26%
	POI's s Showed during your trip are…? ☐ Enough 58% ☐ Too much ☐ Few 42%
Routes	If you want to change the route to do it is….? ☐ Easy 6% ☐ Regular 10% ☐ Difficult 84%

	If you choose the wrong path, the time it takes to tell you is...? 1secons-10seconds94% 10- 20 seconds 6% 20 – 30 seconds More than 30 seconds New route not found
Accessibility	In case you make use of a specific route because a mobility aid ..? Is optimal 25% Regular 75% It doesn't show any different
Suggestions	Please feel free to share your opinion about the route planner

Table 12-Wayfis Mobility Tests - by walking - Results1st Phase

1.1-Gender

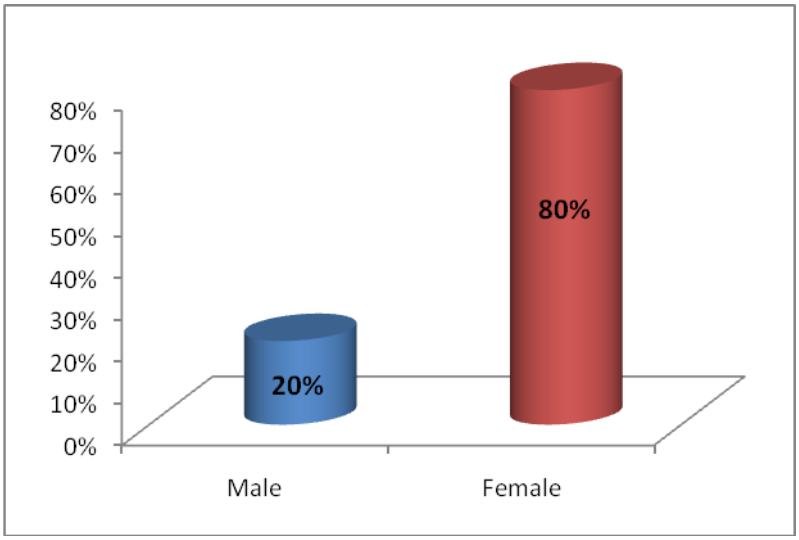

Figure 138-Gender

Concerning the gender of seniors tested 80% were women and 20% men.

1.2-Level of Education

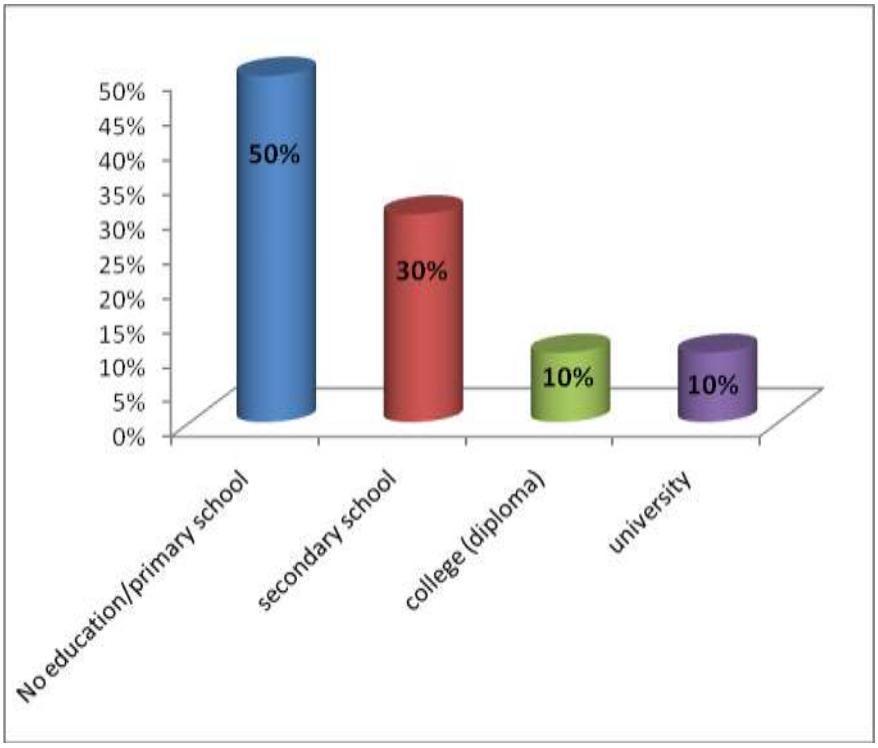

Figure 139-Level of education

Relating level of education seniors are divided in different levels of education in concrete: 50% were seniors with no education/ primary school, 30% were seniors with secondary school and 10-10% were studied at a college or at university.

1.3-Current employment status

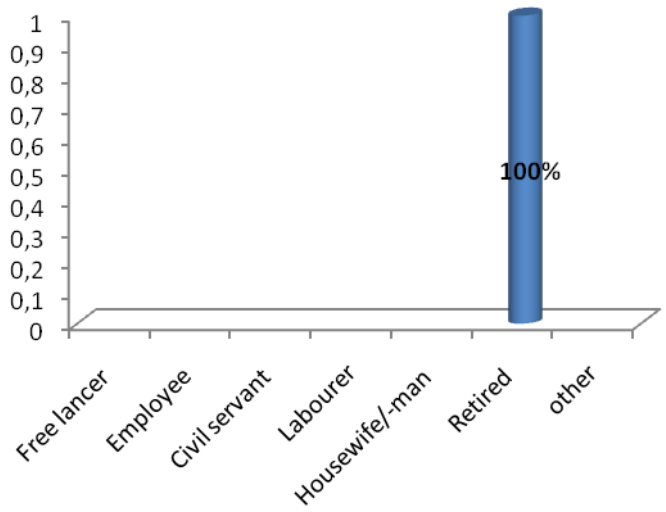

Figure 140-Current employment status

In the SMIMO everybody is retired, so that's why it was sure that 100% of the people will have a retired as the employment status.

1.4-Transport used

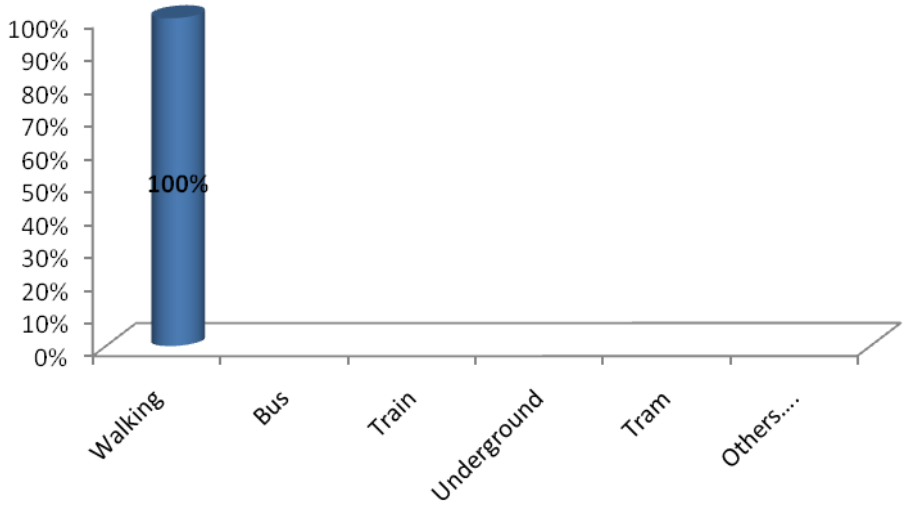

Figure 141–Transport used

In these mobility tests 100% of seniors were walking taking into account public transport weren't available for Tökö1, Ráckeve. And with 2 elderlies we could only do walking tests, too in Csepel, the 21th destrict of Budapest.

1.5-Travel used with..

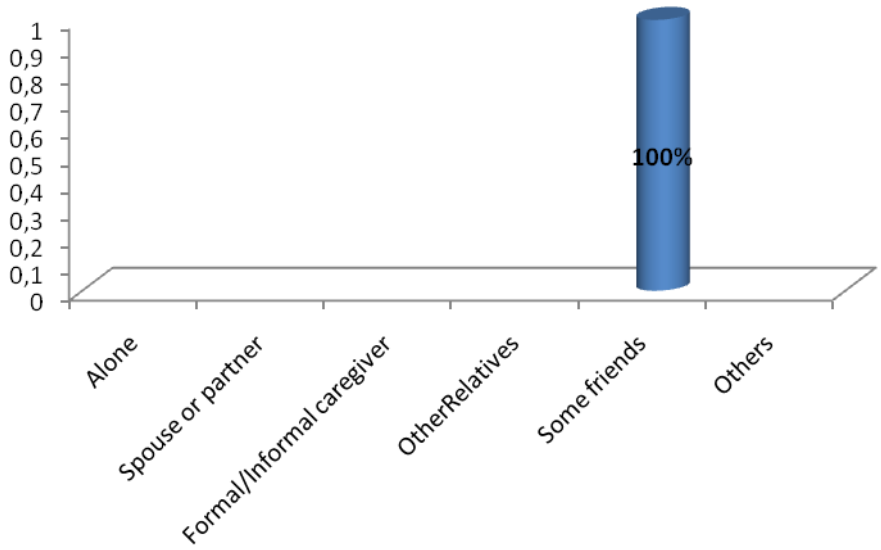

Figure 142-Travel with:..

In this validation the majority of seniors tested done mobility tests with some friends living at the SMIMO. Everybody had the chance to take part in the tests, but the groups on the travelling date organized by friends. Of course because of the seniors physical status me and a nurse or a social worker was involved during our tests, too.

1.6-Turn on the application: Time to switch on

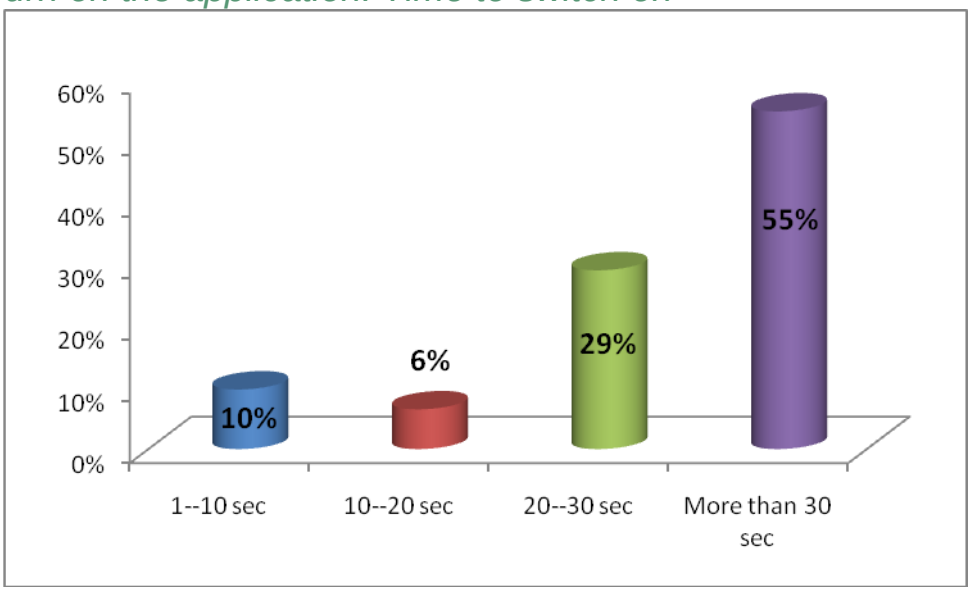

Figure 143-Turn on the application: Time to switch on..

Concerning the time to switch on the application users considered the procedure slow and hard because of their hands first of all. And because they are not used to using

smartphones.10% answered 1-10 seconds and 6% answered 10-20 seconds, 29% answered 20-30 seconds and 55% answered that she or he needs more than 30 seconds..

1.7-Find a departure, intermediate, destination point in the system

1.7.1-Finding the actual position with the button

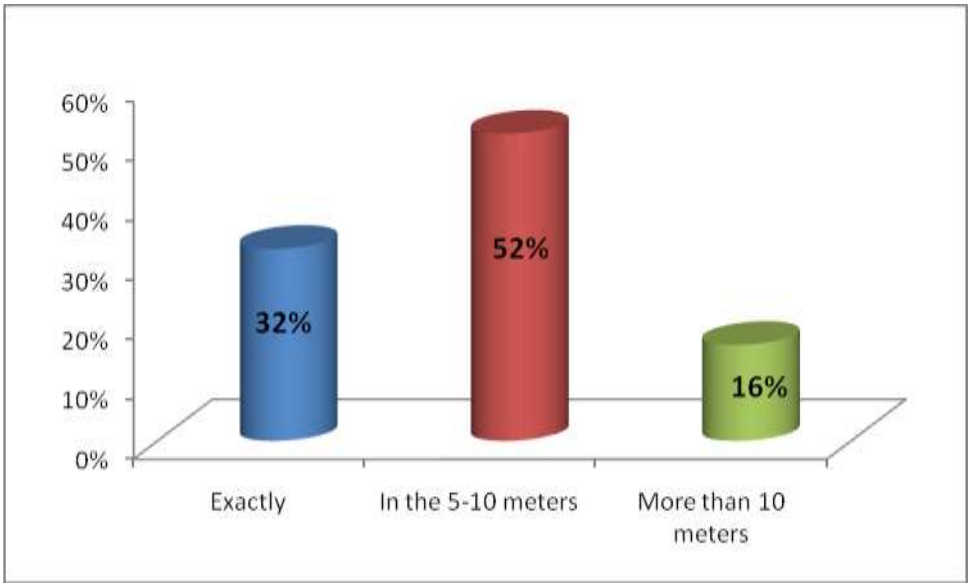

Figure 144-Find a departure, intermediate, destination point in the system: Finding the actual position with the button

Relating senior's answers of find the actual position with the button improved considerably, 32% answered exactly and 52% answer between 5-10 meters and 16% said that it is more than 10 meters.

1.7.2-Finding the departure point by writing

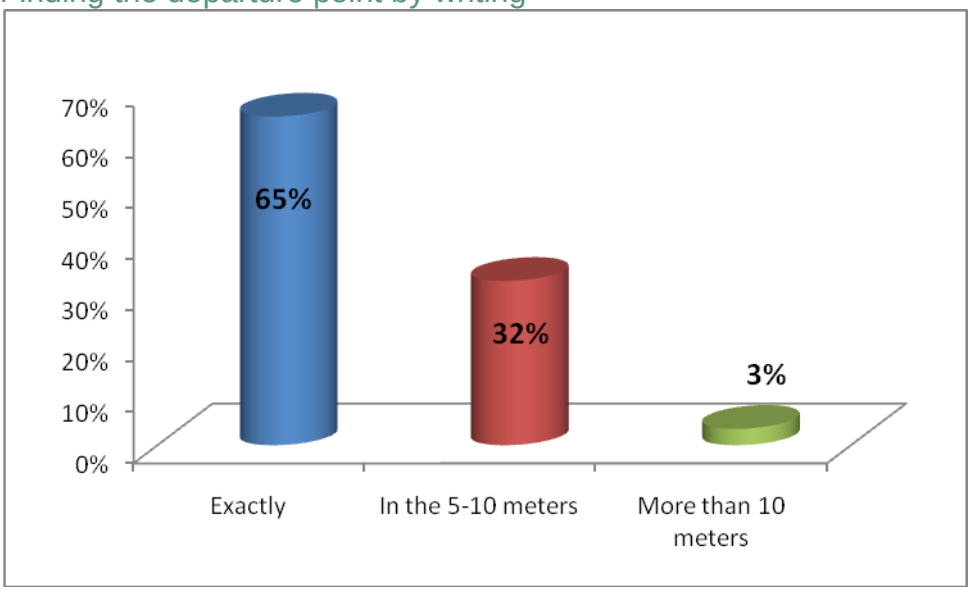

Figure 145-Find a departure, intermediate, destination point in the system: Finding the departure point by writing

About this issue seniors continued with problems with touch screen in order to write the departure address. They were complaining that the size of the buttons and the fonts

are too small and even if they could see it well touching the letters on the screen was very hard for them. Men were complaining about that their hand is bigger from the beginning so in this case they are not able to touch only 1 letters at all. But after a time and with some help they could enter the points. And the system found departure point by writing better than with the actual position button. 65% of seniors tested answered exactly and 32% commented between 5-10 meters, 3% said more than 10 meters.

1.7.3-Finding the departure point

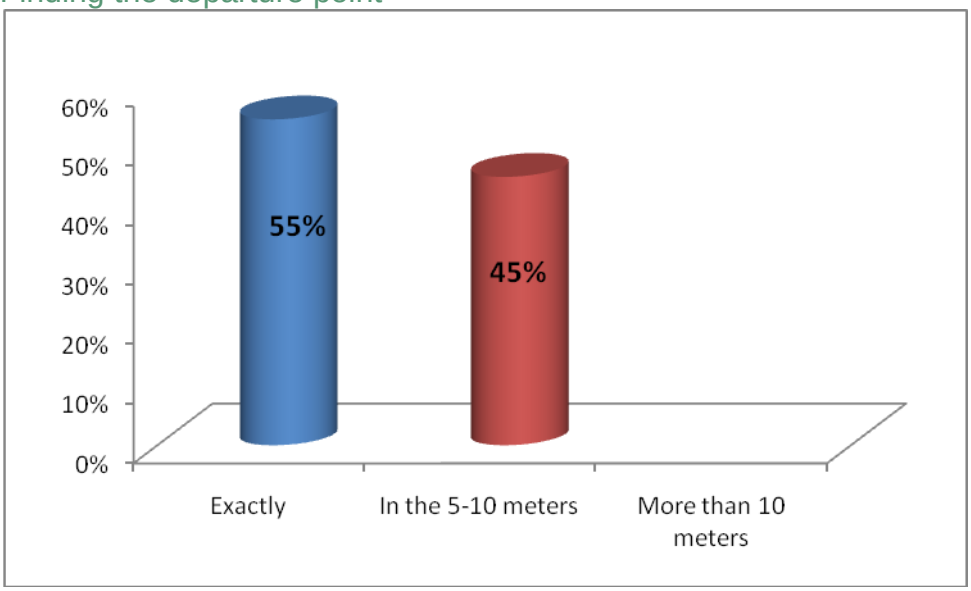

Figure 146-Find a departure, intermediate, destination point in the system: Finding the departure point

In this case to find the departure point in map 55% of users tested commented exactly and 45% commented in 5-10 meters.

1.7.4-Finding the intermediate point

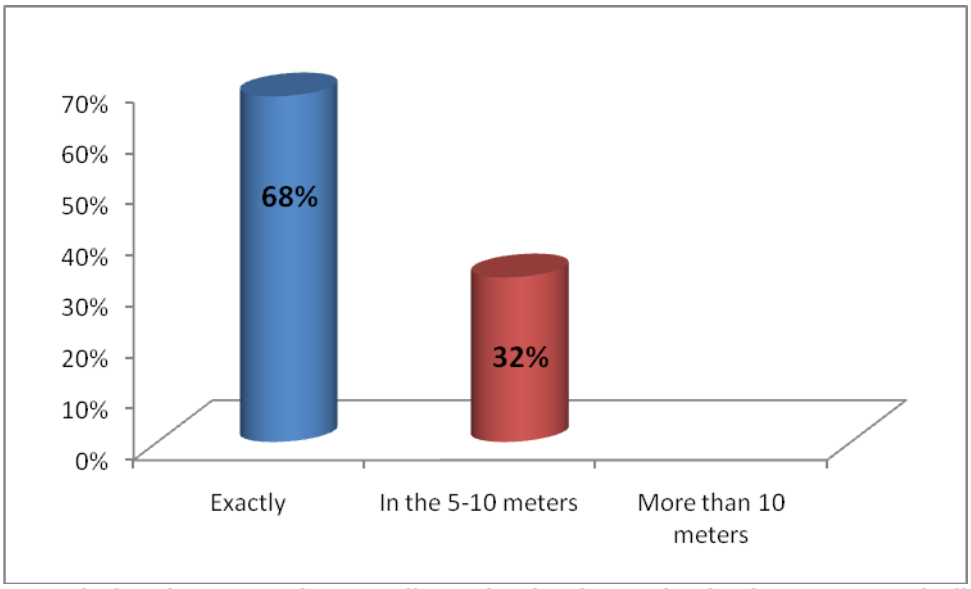

Figure 147-Find a departure, intermediate, destination point in the system: Finding the intermediate point

Relating the question to find an intermediate point 68% of seniors answered the mobile application finds it exactly and 32% answered in 5-10 meters. This good results was

most probably because they did not use the actual position possibility for adding the address of the intermediate point.

1.7.5-Finding the destination point

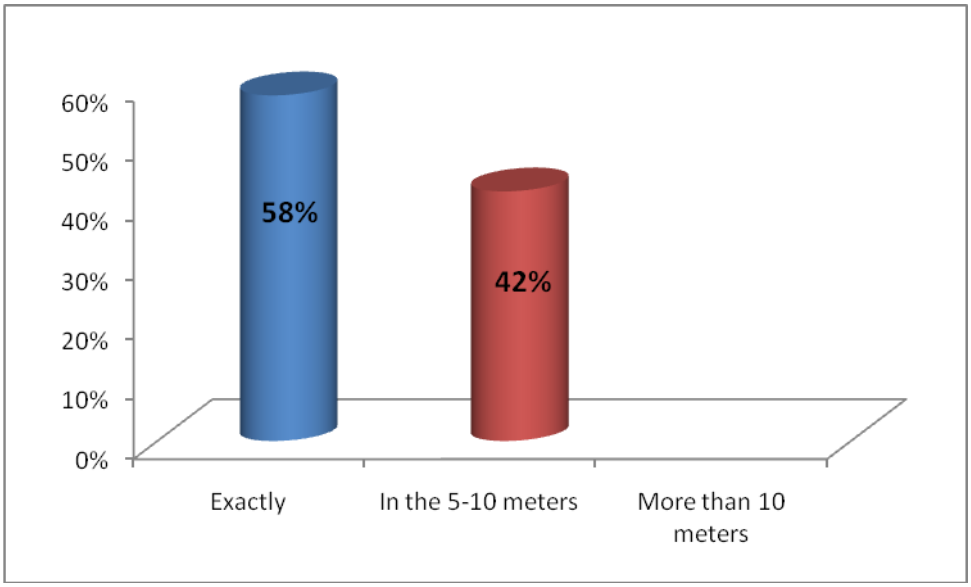

Figure 148-Find a departure, intermediate, destination point in the system: Finding the destination point

58% of seniors tested considered WayFiS mobile application finds a destination point exactly and 42% considered between 5-10 meters, when they wrote the address or clicked the destination point in the map. There was nobody saying that the destination point is more than 10 meters far.

1.7.6-Accurancy regarding the departure, destination

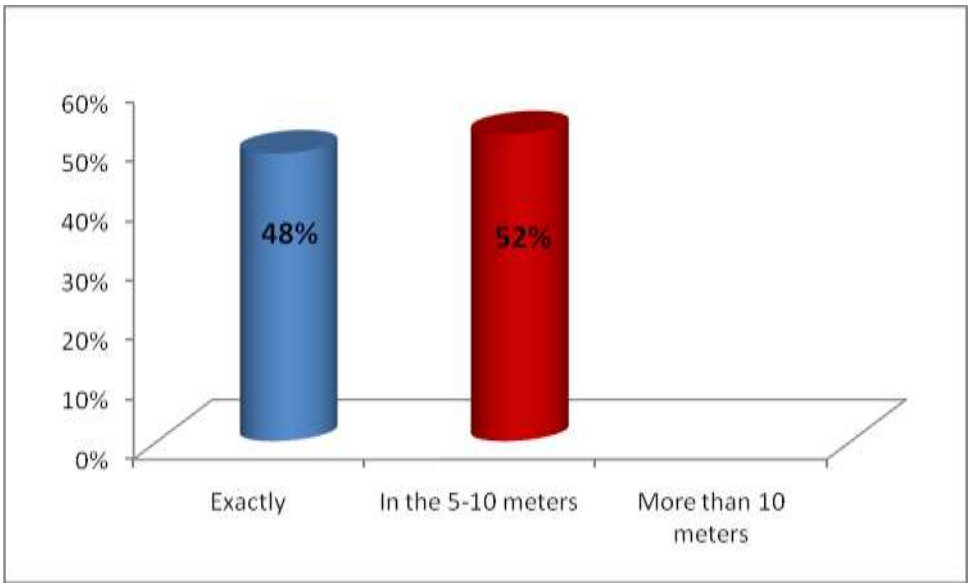

Figure 149-Find a departure, intermediate, destination point in the system: Accurancy regarding the departure, destination

Generally concerning accuracy regarding the departure and destination reflected in the map 48% answered exactly and 52% between 5-10 meters which is reasonable result

after the previous answers, result of finding the destination, departure and intermediate point.

1.7.7-Speed in found the points

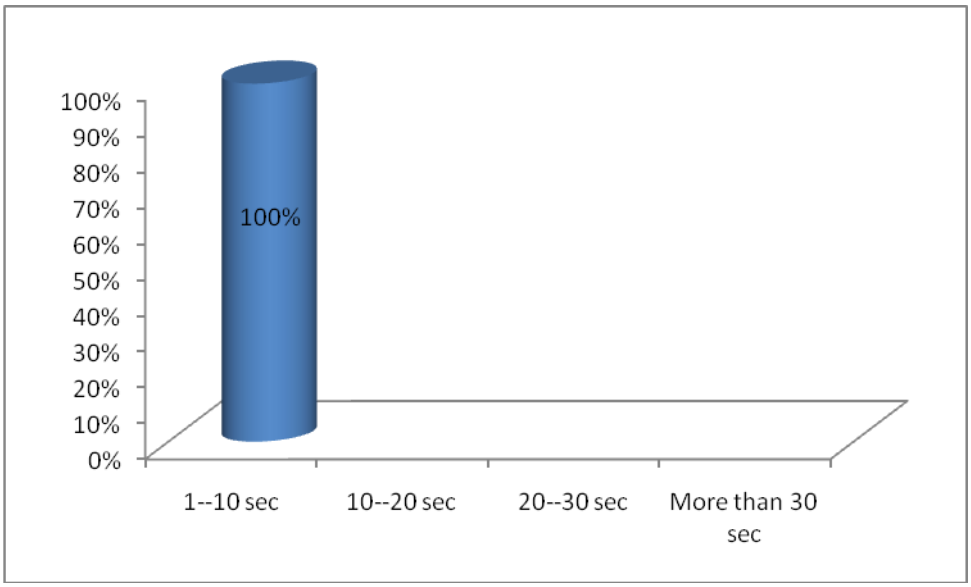

Figure 150-Find a departure, intermediate, destination point in the system: Speed in founding the points

About the speed in found the pointssenior's answers 100% answered between 1-10 seconds. For them the Samsung SIII smartphone was sometimes more than click. They were complaining that it is too sensitive.

1.8-The planned route

1.8.1-The route planned by the app is understandable..

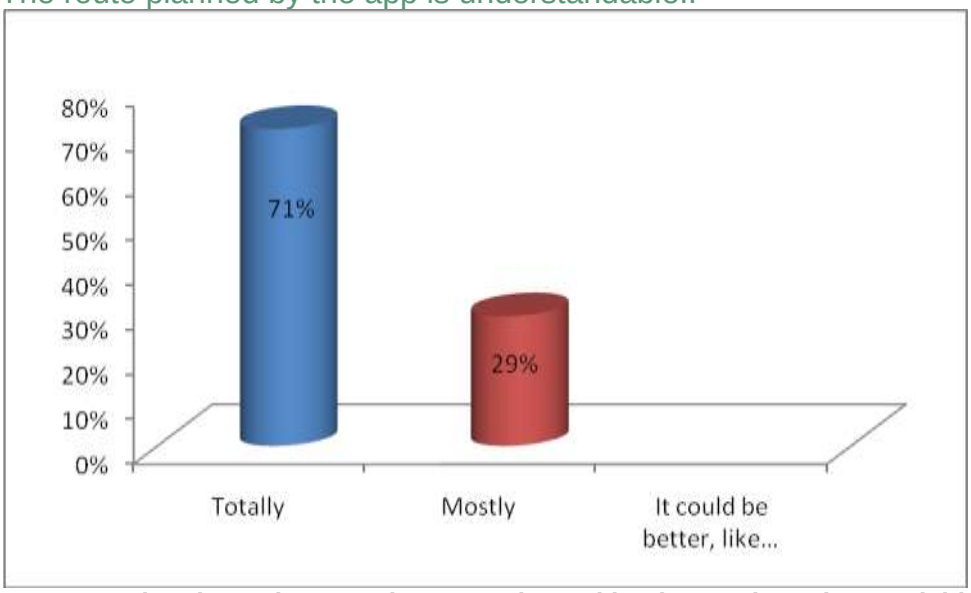

Figure 151- The planned route: The route planned by the app is understandable..

When mobile application planned a route in the map 71% of users tested answered it is totally understandable because it is possible to open the zoom in this step and see the name of the streets and exact situation of departure, intermediate and destination

points, but they were missing the possibility of zooming on the map during the time they walked. 29% considered mostly understandable.

1.8.2-The offered transport were correct..

There isn't any public transport in Tökö̈l, so this question was not adequate..

1.8.3-The time showed for the linked transport were correct..

This question wasn't answered because there isn't any public transport available in Tökö̈l.

1.8.4-The appeared commands during the route are…

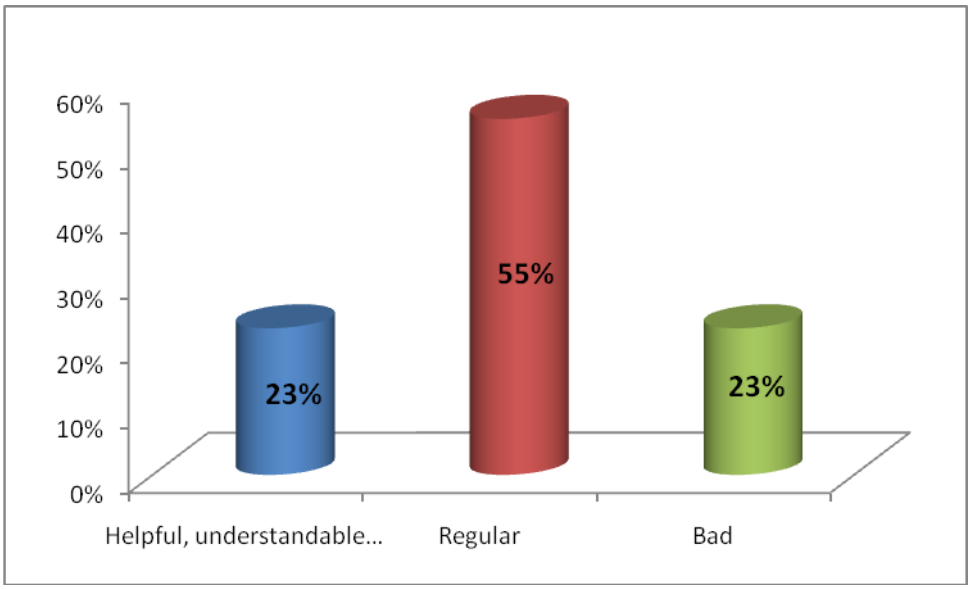

Figure 152-The planned route: The appeared commands during the route are…

Relating the commands that appear in the route 23% considered helpful and understandable and 55% regular. Seniors commented on missing English translations and some not really understandable command. Like when they where on the way but the app still said that she left the route and needs to turn back. Also there were other command with that what you can find in the suggestions.

1.8.5-Changing between route is..

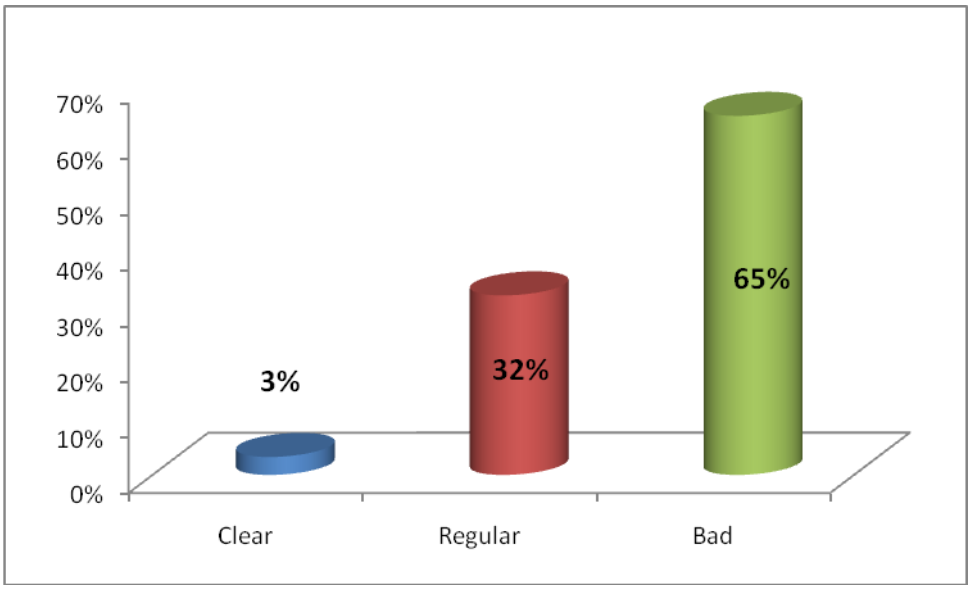

Figure 153-The planned route: Changing between route is…

The seniors answer for this question was really bad. Only 3% of them found changing the route clear, the rest found it regular or bad. They could change it very hardly and they found it very complicated clicking on so many things.

1.8.6-Images and letters during the route are…

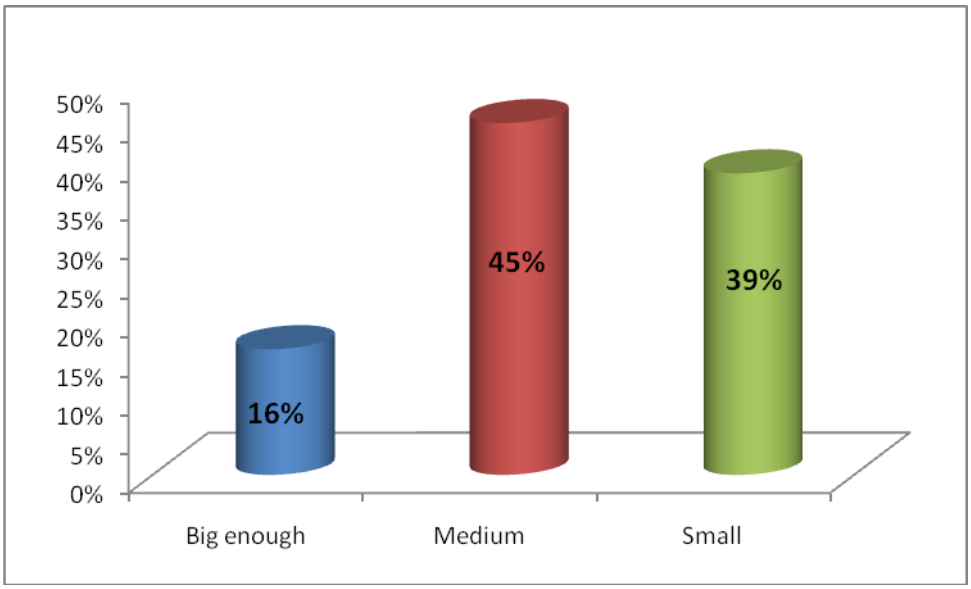

Figure 154-The planned route: Images and letters during the route are..

Like in the design and usability tests seniors found the images and letters usually medium or small size. During the route it was even harder for them to realize the small pictures and letters because they were walking on the way. And even it was hard to read without glasses for everybody, 16% found the images and letters big enough.

1.8.7-Speed changing between route is..

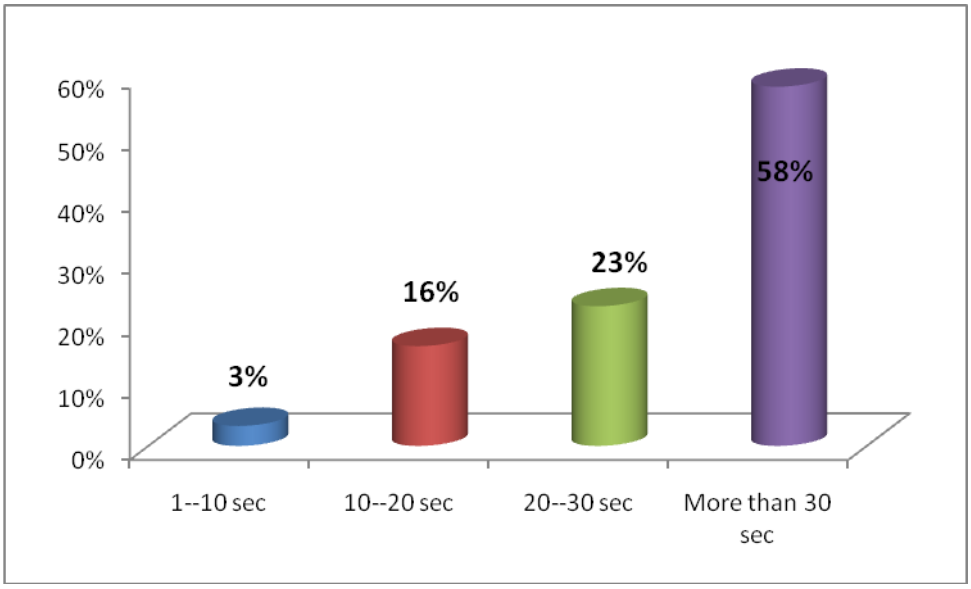

Figure 155-The planned route: Speed changing between route is..

How it was shown seniors found changing the route not so easy. And it is also took them longer time to change the routes. 58% of them needed more than 30 sec, and there were some elderly who even needed many minutes to change it.

1.9-Screen

1.9.1-Brightness of screen is…

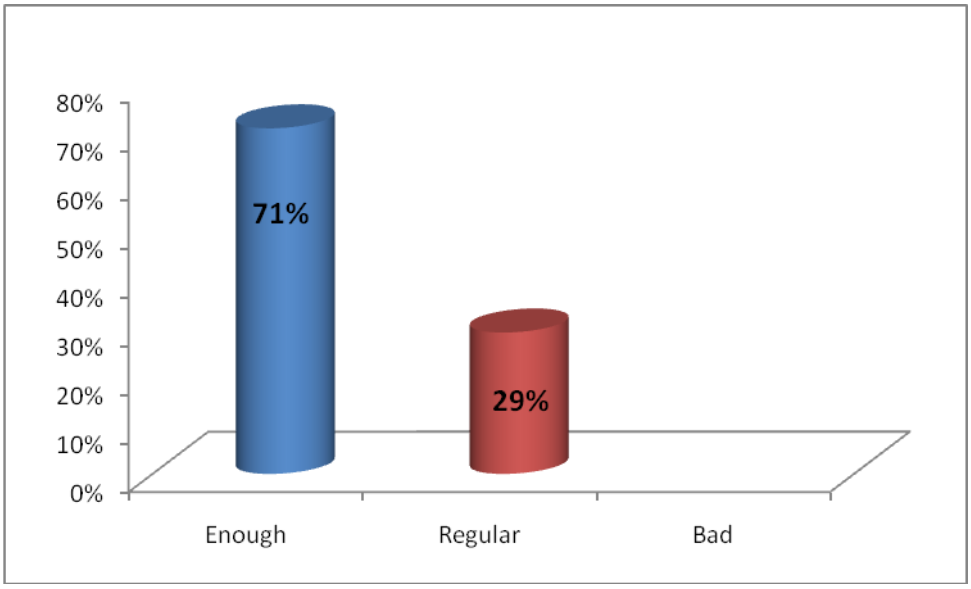

Figure 156- Screen: Brightness of screen is..

Concerning the brightness of screen 71% answered enough and 29% considered the brightness regular.

1.10-POI's

1.10.1-POI's simbology is understandable

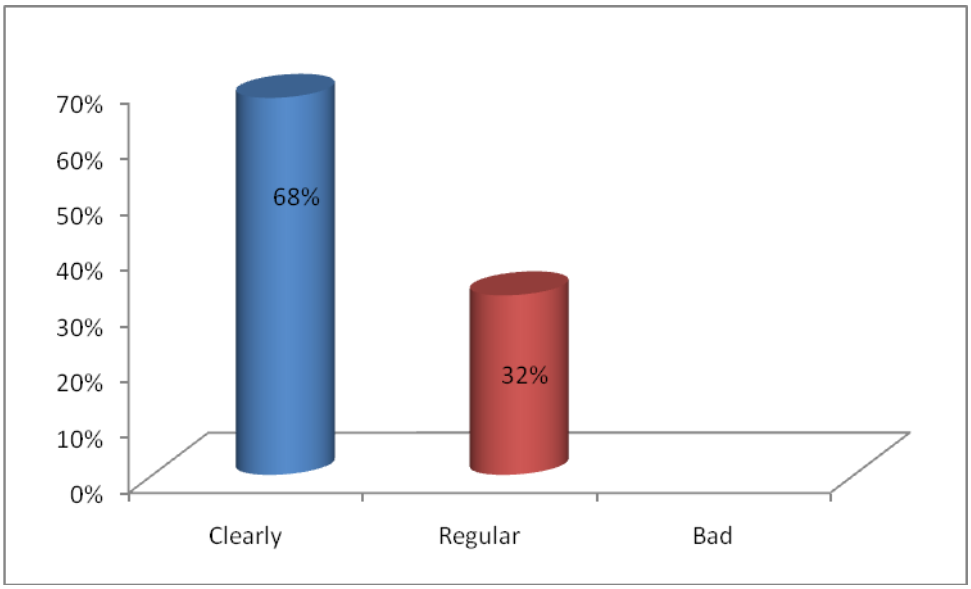

Figure 157- POI's: POI's simbology is understandable

Like in the usability and design tests seniors liked the Pol'ssimbology. 68% said that it is clear for him/her and 32% said that it is regular. Generally they liked the idea.

1.10.2-During your trip your profile settings and the POI's showed to you…?

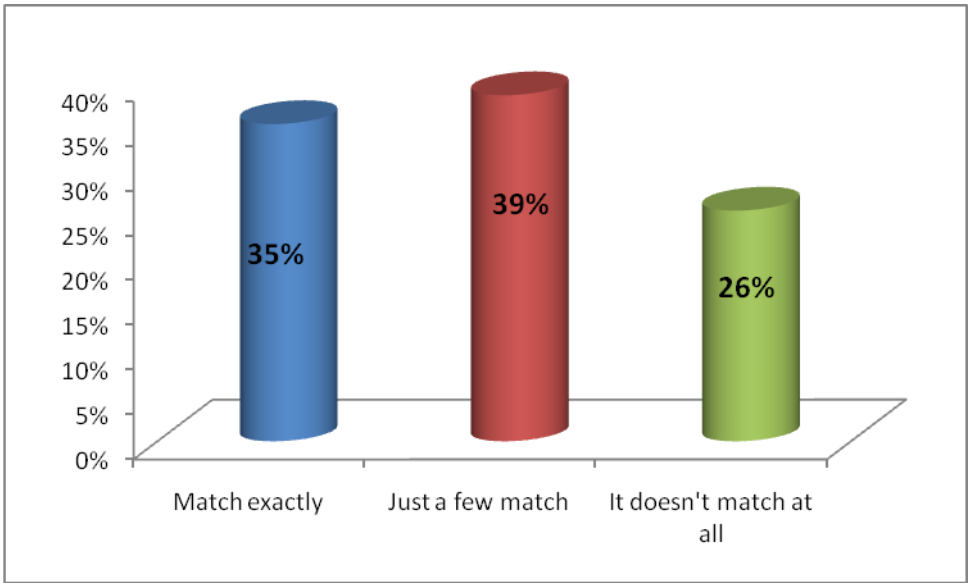

Figure 158- POI's: During your trip your profile setting and the POI's showed to you…?

35% of users tested commented POI's showed match exactly with their profile and 39% commented just a few match. But there were some parts of Tököl where the application couldn't find any.

1.10.3-POI's showed during your trip are..?

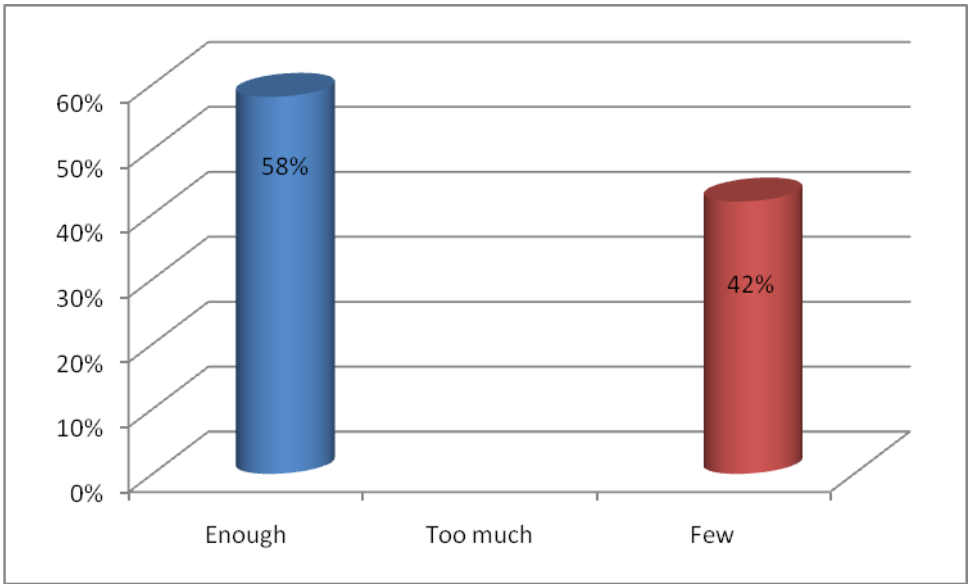

Figure 159-POI's: POI's showed your trip are..

Concerning the amount of POI's showed during the trip 58% commented they are enough and 42% commented were few POI's available. They never felt that the number of the PoIs are too much.

1.11-Routes

1.11.1-If you want to change the route to do it is…?

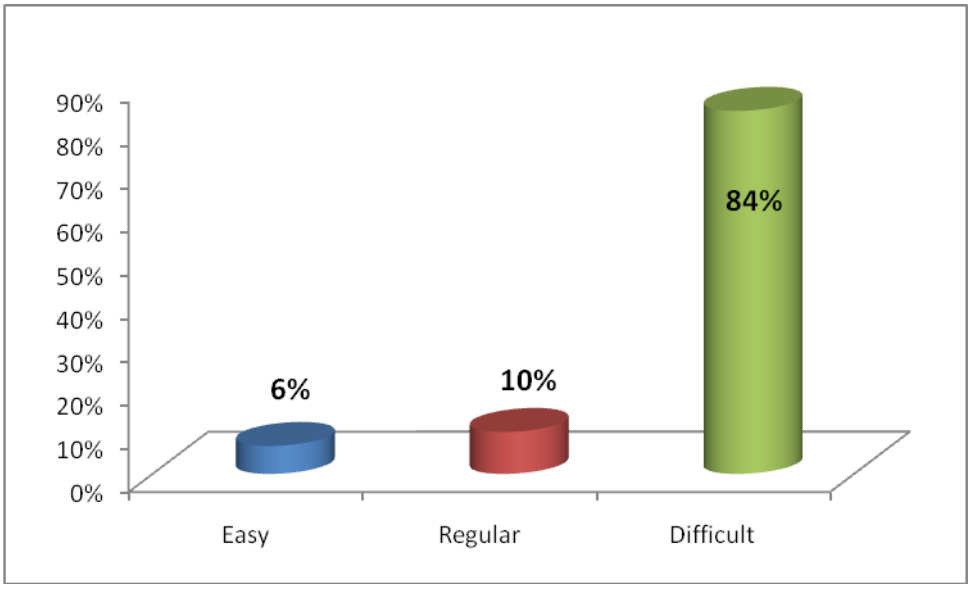

Figure 160-Routes-If you want to change the route to do it is….?

Like it was mentioned before changing between routes were not easy for them. And also changing the route was hard because even if they had mostly problems with the typing, clicking.

1.11.2-If you choose the wrong path, the time it takes to tell you is….?

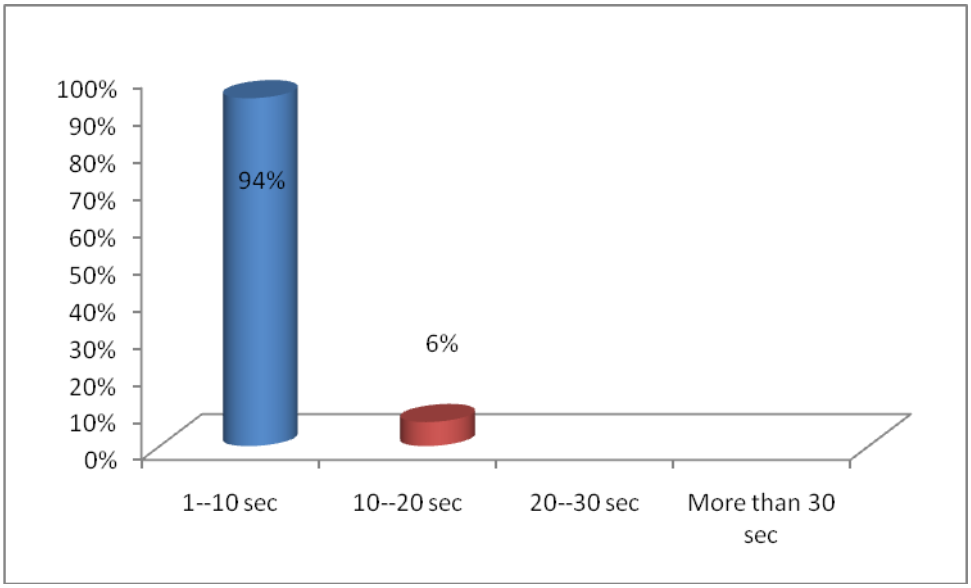

Figure 161- Routes: If you choose the wrong path, the time it takes to tell you is….?

Concerning the time to indicate a new route 94% of seniors answered between 1-10 seconds and only 6% between 10-20 seconds. It is related to the answer that seniors found the application very quick!

2.4. 1.12-Accessibility

1.12.1-In case you make use of a specific route because mobility aid…

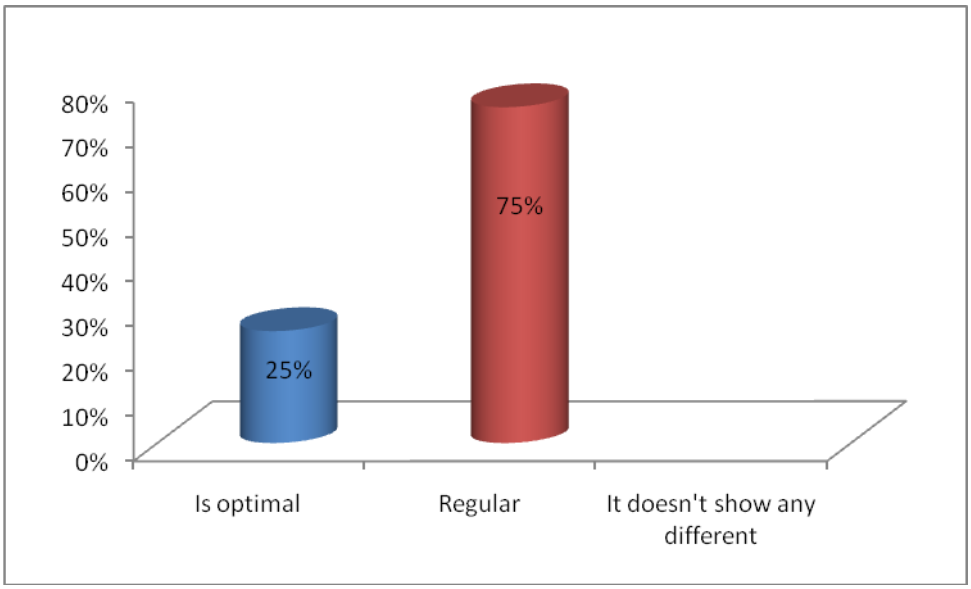

Figure 162-Accessibility.

About question related with a specific route due mobility aid 25% considered it optimal and 75% considered it regular.

2. Mobility tests by using public transportation in Budapest - Hungarian Results

15 mobility tests by using public transportations were done in Budapest with one experienced senior and once with one group of the elderlies from SMIMO. These tests were taken in the first week of August. The involved senior out of the SMIMO was involved to get more relevant and useful tests from seniors who are well experienced in using technology and have worked in related field before. He travelled alone during the week and filled the test with his opinions. With the 5 ladies from the SMIMO we came to Budapest and use only one transport system, the suburban railway. All the tests were done by Samsung SIII and with the WayFiS application version10.

Image 40-Wayfis Mobility Tests (Hungary)

Image 41-Wayfis Mobility Tests (Hungary)

Image 42-Wayfis Mobility Tests (Hungary)

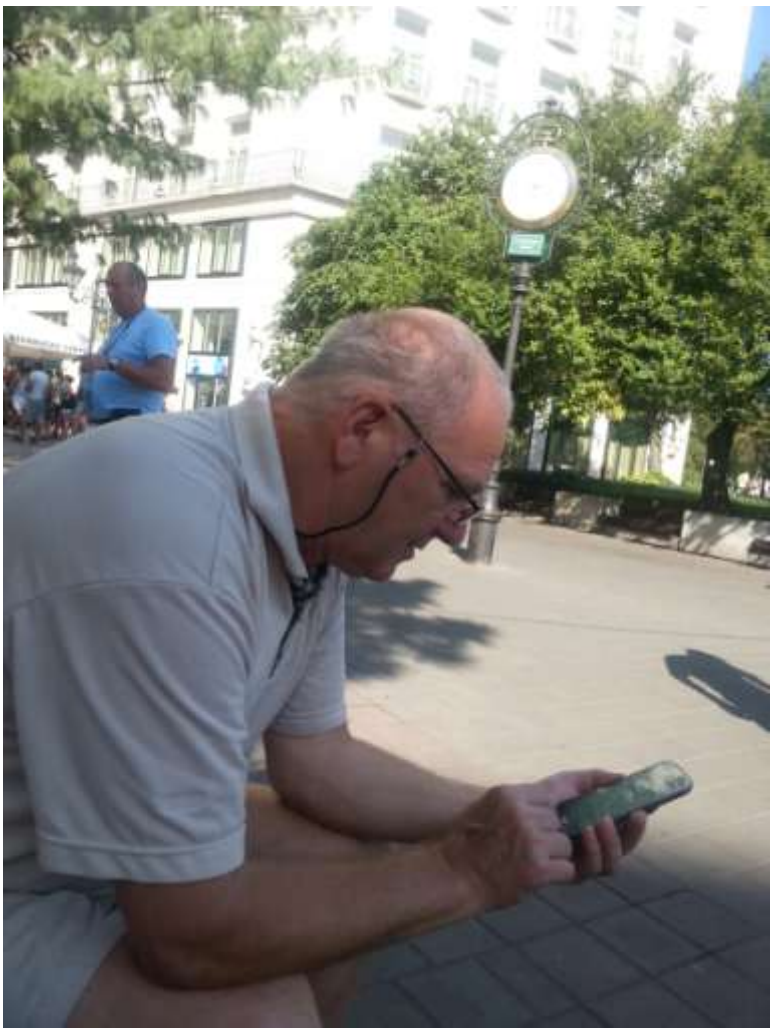

Image 43-Wayfis Mobility Tests (Hungary)

TRAVEL QUESTIONNAIRE	
Date	
Name	
Age	
Gender	☐ Male 33% ☐ Female67%
Level of education	☐ No education/primary school 50% ☐ Secondary school 17% ☐ College (diploma) ☐ University 33%
Current employment status	☐ Free lancer ☐ Employee ☐ Civil servant ☐ Labourer ☐ Housewife/-man ☐ Retired 100% ☐ other_____
Travel date	
Travel start time	
Origin	
Destination	
Reason for travel	
Transport used	☐ Walking 100% ☐ Bus 27% ☐ Train ☐ Underground 13% ☐ Tram 27% ☐ Others…. 33%
Travel with:	☐ Alone 67% ☐ Other Relatives ☐ Spouse or partner ☐ Some friends33% ☐ Formal/Informal caregiver ☐ Others

Turn on the application	Time to switch on 1-10 seconds 67% 10- 20 seconds 7% 20 – 30 seconds 13% More than 30 seconds 13%
Finding a departure, intermediate, destination point in the system	Finding the actual position with the button Exactly 53% In the 5-10 meters 33% More than 10 meters 13%
	Finding the departure point by writing Exactly 33% In the 5-10 meters 53% More than 10 meters 13%
	Finding the departure point Exactly 53% In the 5-10 meters 40% More than 10 meters 7%
	Finding the intermediate point Exactly 67% In the 5-10 meters 33% More than 10 meters No applicable
	Finding the destination point Exactly 67% In the 5-10 meters 13% More than 10 meters 20%

	Accuracy regarding the departure, destination	
	Exactly	53%
	In the 5-10 meters	33%
	More than 10 meters	13%
	Speed in founding the points	
	1secons-10 seconds	87%
	10- 20 seconds	13%
	20 – 30 seconds	
	More than 30 seconds	
The planned route	The route planned by the app is understandable:	
	Totally	73%
	Mostly	27%
	It could be better, like …..	
	The offered transports were correct	
	Totally	80%
	Mostly	20%
	Not at all	
	The time showed for the linked transport were correct	
	Totally	93%
	Mostly	7%
	Not at all	
	The appeared commands during the route are….	
	Helpful, understandable…	7%
	Regular	73%
	Bad	20%

	Changing between routes is ☐ Clearly 40% ☐ Regular 40% ☐ Bad 20% New route not found
	Images and letters during the route are… ☐ Big enough 67% ☐ Medium 27% ☐ Small 6%
	Speed changing between routes is ☐ 1secons-10 seconds 47% ☐ 10- 20 seconds 33% ☐ 20 – 30 seconds 20% ☐ More than 30 seconds ☐ New route not found
Screen	Brightness of the screen is… ☐ Enough 80% ☐ Regular 20% ☐ Bad
POI's	POI's simbology is understable…? ☐ Clearly 93% ☐ Regular 7% ☐ Bad No POI's available
	During your trip your profile settings and the POI's showed to you…?

	Match exactly 93% Just a few match 7% It doesn't match at all
	POI's s Showed during your trip are…? Enough 47% Too much 27% Few 26%
Routes	If you want to change the route to do it is….? Easy 6% Regular 10% Difficult 84%
	If you choose the wrong path, the time it takes to tell you is...? 1secons-10seconds 93% 10- 20 seconds 7% 20 – 30 seconds More than 30 seconds New route not found
Accessibility	In case you make use of a specific route because a mobility aid ..? Is optimal 67% Regular 27% It doesn't show any different
Suggestions	Please feel free to share your opinion about the route planner

Table 13-Wayfis Mobility Tests - in Budapest - Results 1st Phase

1.1-Gender

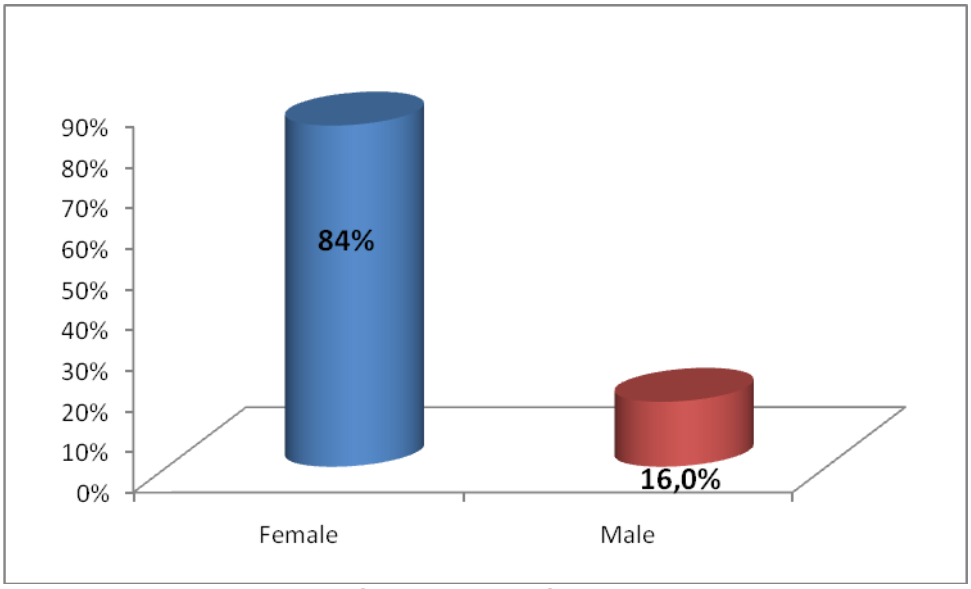

Figure 163-Gender

Concerning the gender of seniors taking part on the mobility test in Budapest 67% were women and 33% men.

1.2-Level of Education

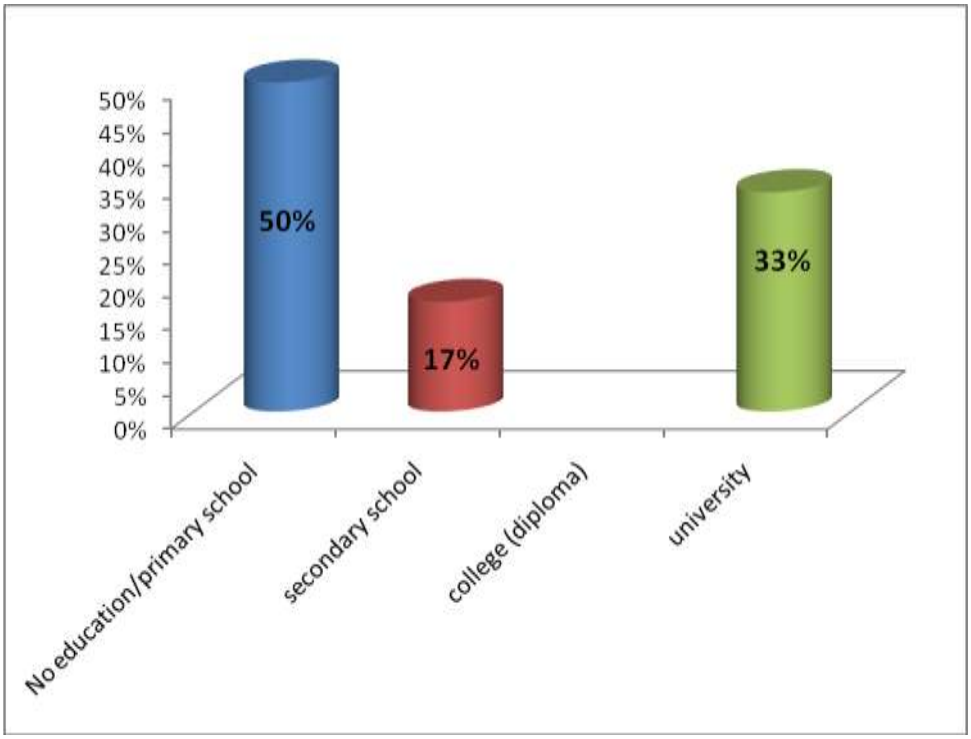

Figure 164-Level of education

Relating level of education seniors are divided in different levels of education in concrete: 50% were seniors with no education/ primary school, 17% were seniors with secondary and 33% with university studies.

1.3-Current employment status

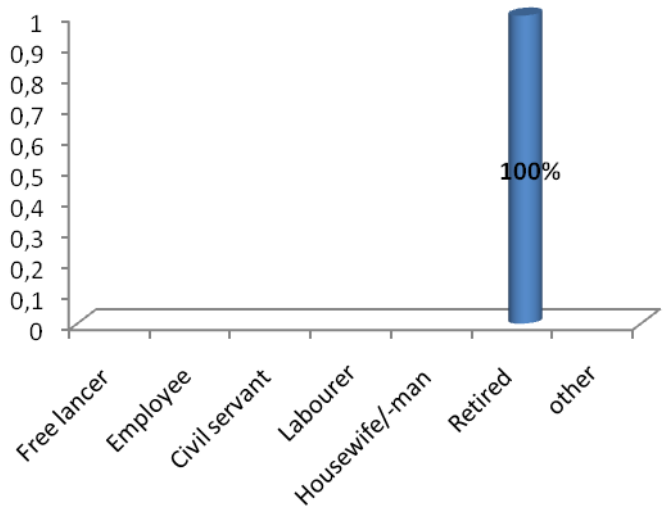

Figure 165-Current employment status

In the first phase of mobility tests in Budapest 100% of seniors tested were retired.

1.4-Transport used

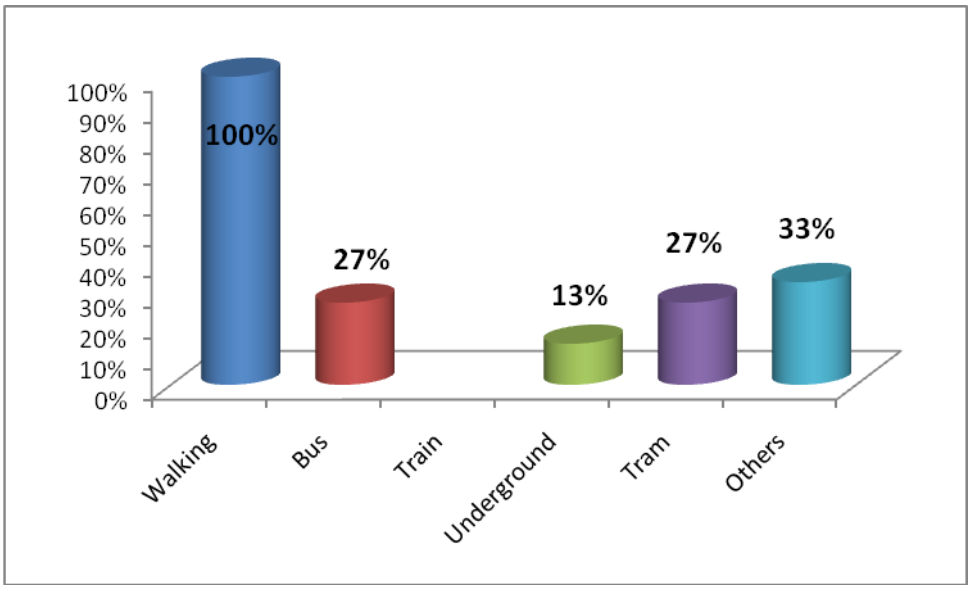

Figure 166–Transport used

In these mobility tests as happened all of the seniors walked but because it was a mobility test with using public transports 27% used bus and tram, 13% used underground and 33% used other transportation, the suburban railway.

1.5-Travel used with..

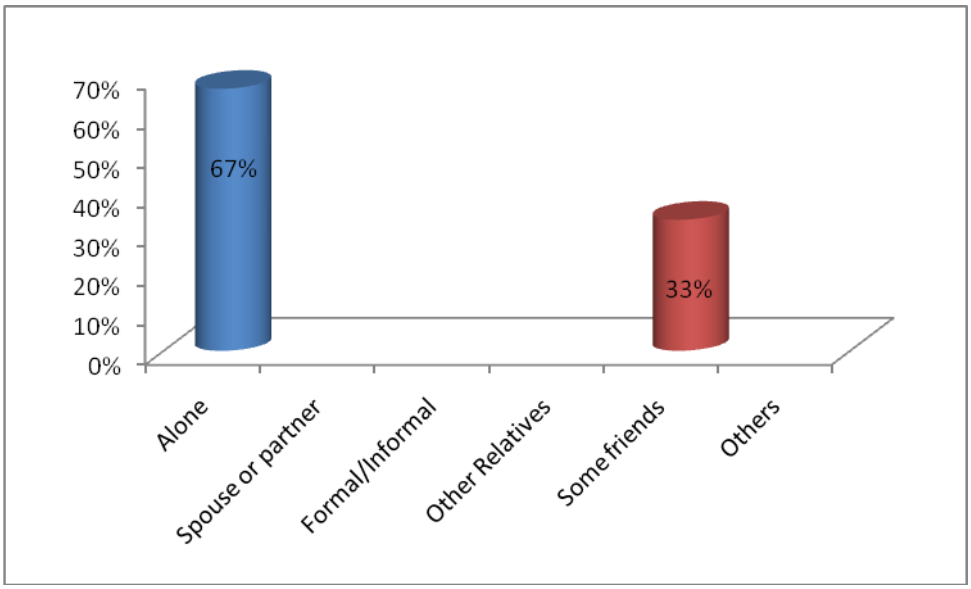

Figure 167-Travel with:..

In this validation the seniors from the SMIMO did the mobility tests with some friends and the other involved man was testing the service alone.

1.6-Turn on the application: Time to switch on

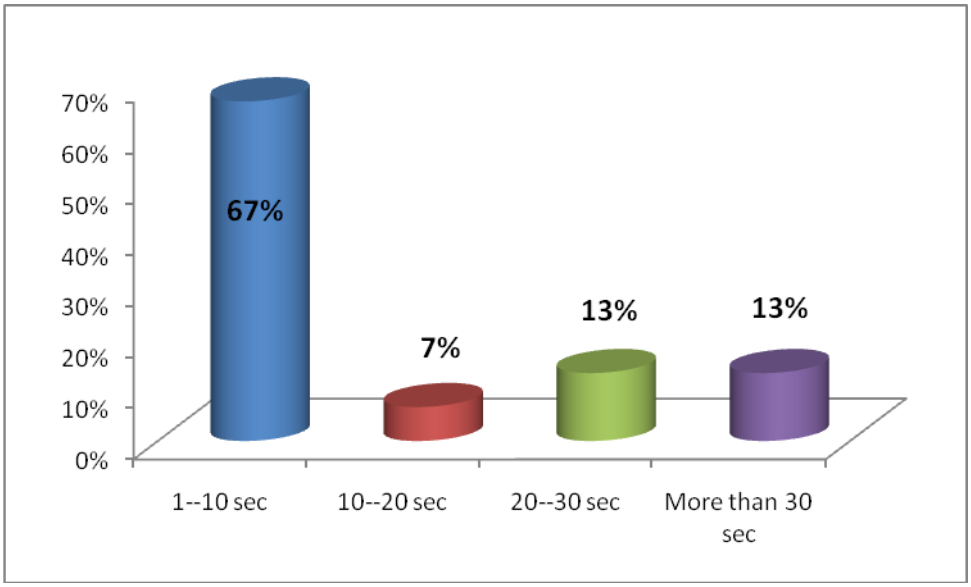

Figure 168-Turn on the application: Time to switch on..

Concerning the time to switch on the application only the man user considered the procedure quick, which is 67% like answering 1-10 seconds and 7% answered 10-20 seconds, 13% that it took 20-30 sec or more than 30 sec.

1.7-Find a departure, intermediate, destination point in the system

1.7.1-Finding the actual position with the button

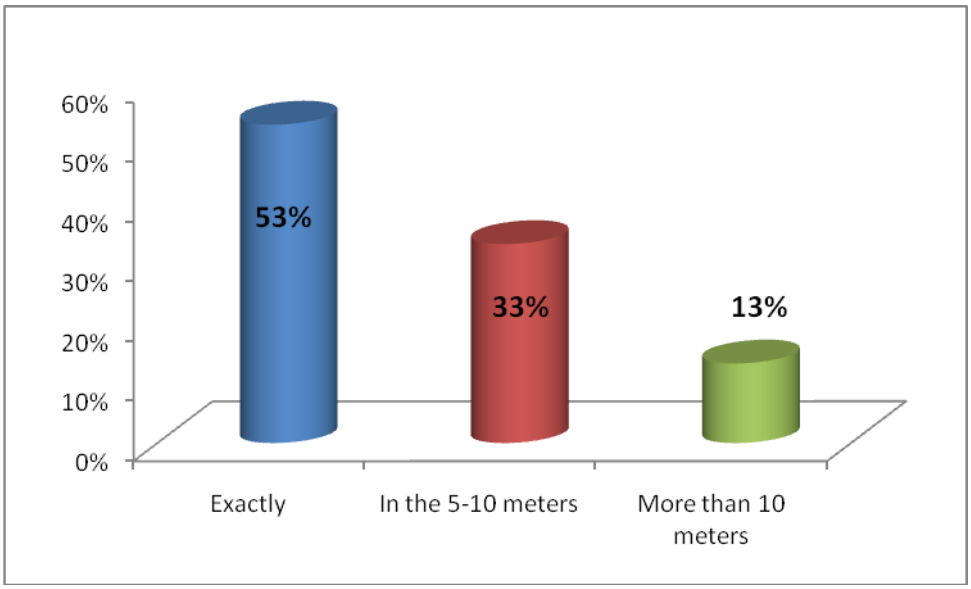

Figure 169-Find a departure, intermediate, destination point in the system: Finding the actual position with the button

Relating senior's answers of first validation and the answers of second validation about find actual position with the button improved considerably, 53% answered exactly and 33% answer between 5-10 meters and 13% answered more than 10 meters.

1.7.2-Finding the departure point by writing

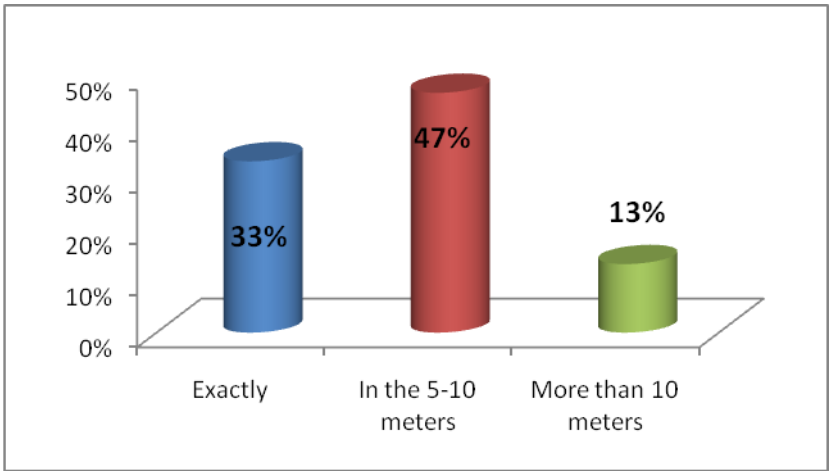

Figure 170-Find a departure, intermediate, destination point in the system: Finding the departure point by writing

Seniors continued with problems with touch screen - like they had during the usability or the design tests - in order to write the departure address, but as the font size and text table departure were increased they felt more comfortable and as result their answers were more positive in comparison with first mobility validation. 33% of seniors tested answered exactly and 47% commented between 5-10 meters which is together more than 80%.

1.7.3-Finding the departure point

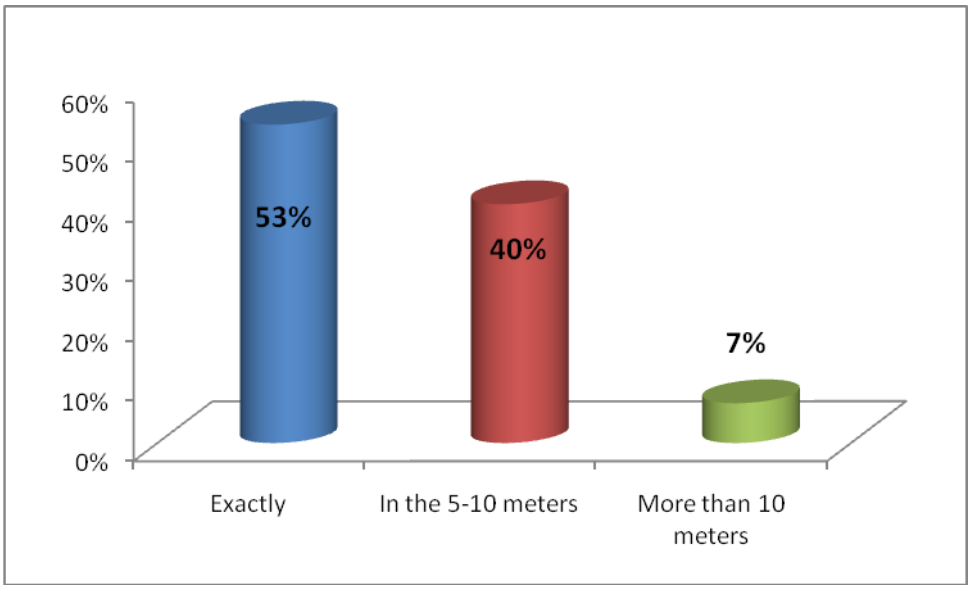

Figure 171-Find a departure, intermediate, destination point in the system: Finding the departure point

Generally finding the departure point on the map got 53% of users tested commented exactly and 40% commented in 5-10 meters and 7% said that it is more than 10 meters.

1.7.4-Finding the intermediate point

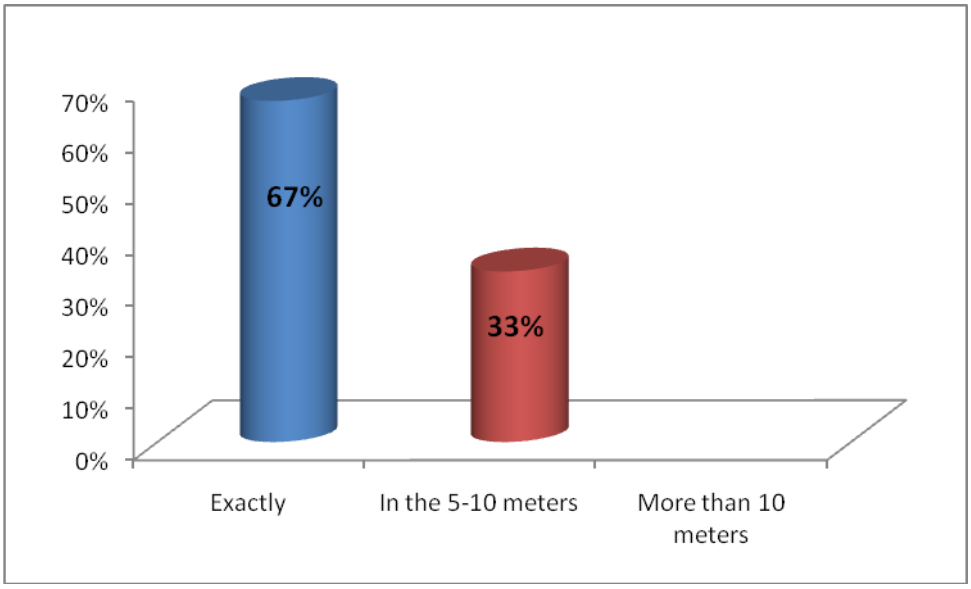

Figure 172-Find a departure, intermediate, destination point in the system: Finding the intermediate point

Relating the question to find an intermediate point 67% of seniors answered the mobile application finds it exactly and 33% answered in 5-10 meters.

1.7.5-Finding the destination point

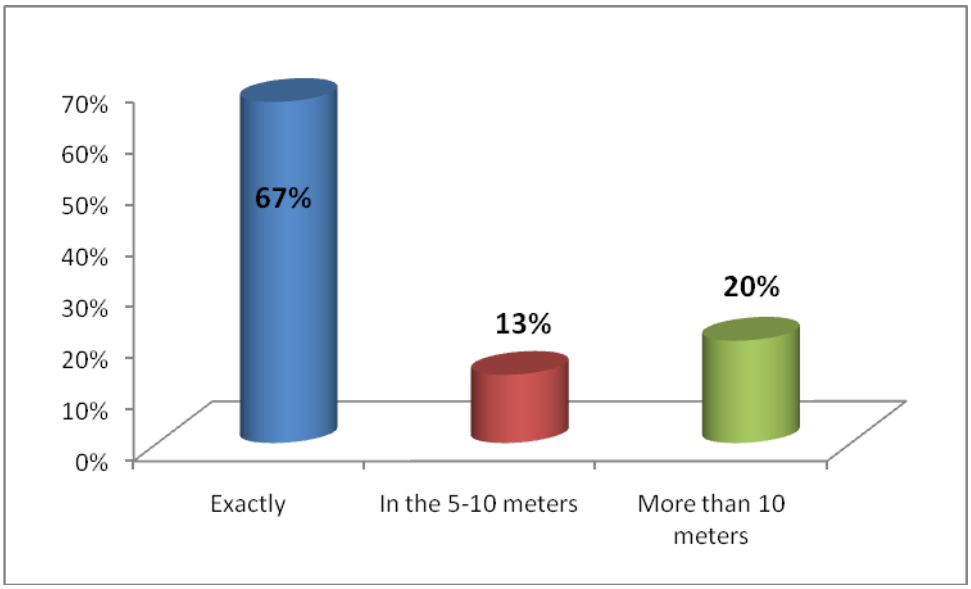

Figure 173-Find a departure, intermediate, destination point in the system: Finding the destination point

67% of seniors tested considered WayFiS mobile application finds a destination point exactly and only 13% considered between 5-10 meters, when they wrote the address or clicked the destination point in the map. 20% of the users found that it is more than 10 meters.

1.7.6-Accurancy regarding the departure, destination

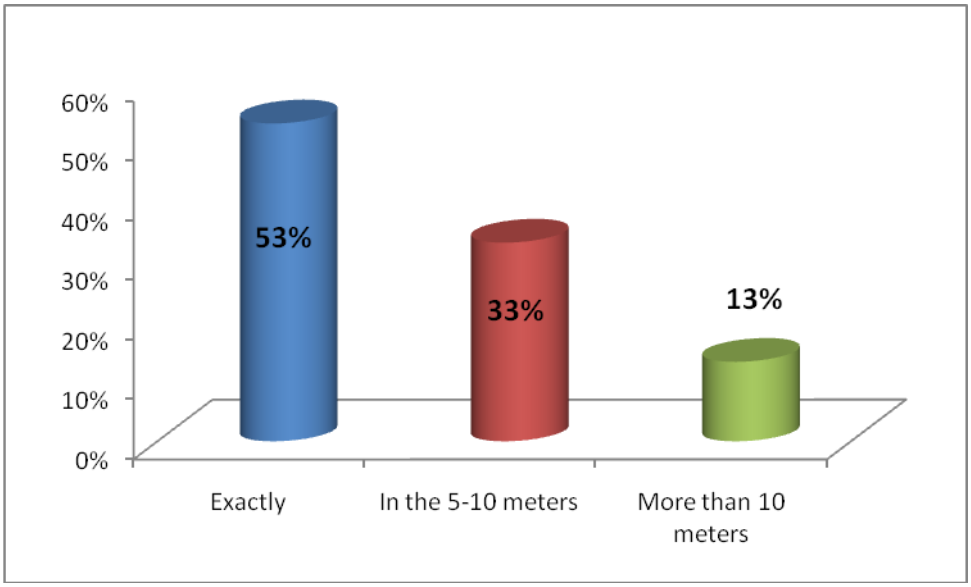

Figure 174-Find a departure, intermediate, destination point in the system: Accurancy regarding the departure, destination

Concerning accuracy regarding the departure and destination reflected in the map 53% answered exactly,33% between 5-10 meters and 13% said more than 10 meters.

1.7.7-Speed in found the points

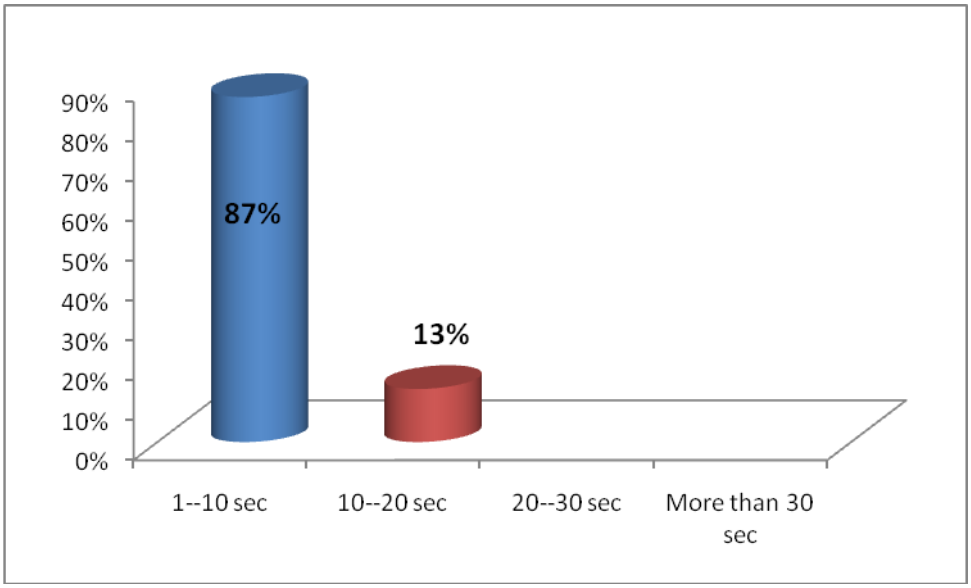

Figure 175-Find a departure, intermediate, destination point in the system: Speed in founding the points

The speed in found the points senior's answers were really good as it was before:87% answered between 1-10 seconds and only 13% answered 10-20 seconds.

1.8-The planned route

1.8.1-The route planned by the app is understandable..

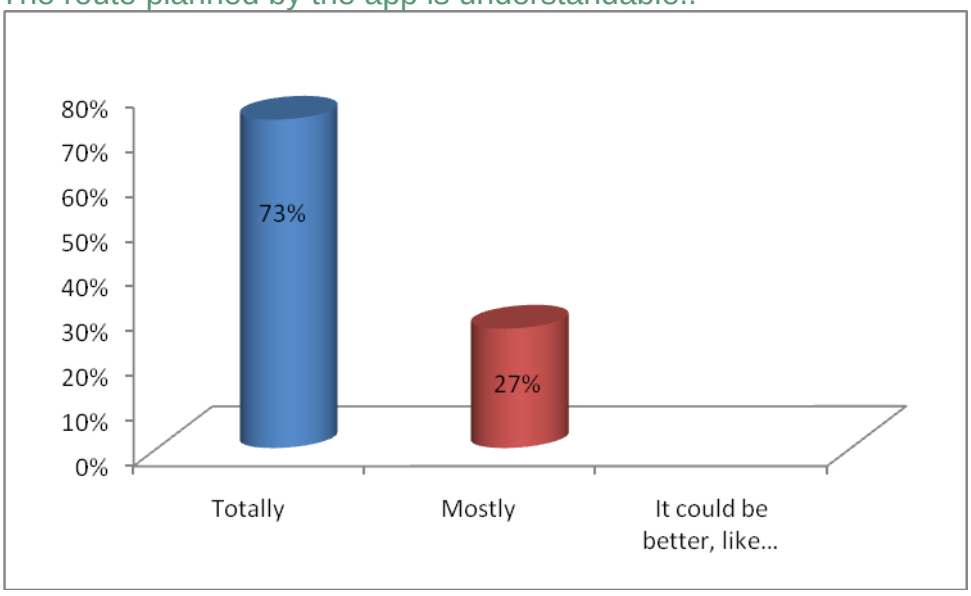

Figure 176- The planned route: The route planned by the app is understandable..

When mobile application planned a route in the map 73% of users tested answered it is totally understandable and only 27% considered mostly understandable.

1.8.2-The offered transport were correct..

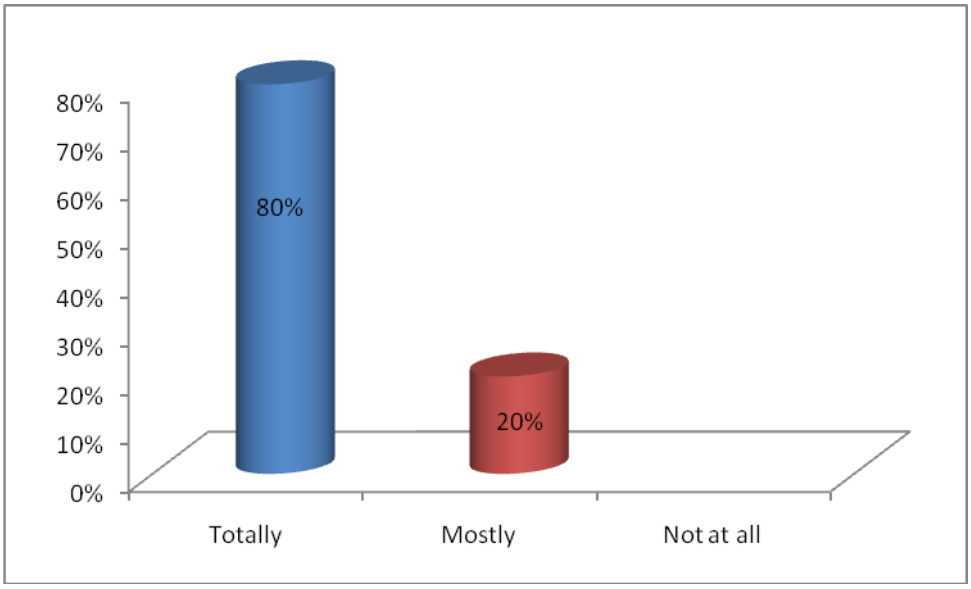

Figure 177- The planned route: The offered transport were correct..

80%of the seniors' found that the transports showed by the application were correct. There were only 20% who said that they weren't because for example the app said that the senior has to get of from the transport one stop before it was needed. Also some of the transports were not given as a possibility. They were also complaining about giving more optional routes because it can be more friendly user.

1.8.3-The time showed for the linked transport were correct..

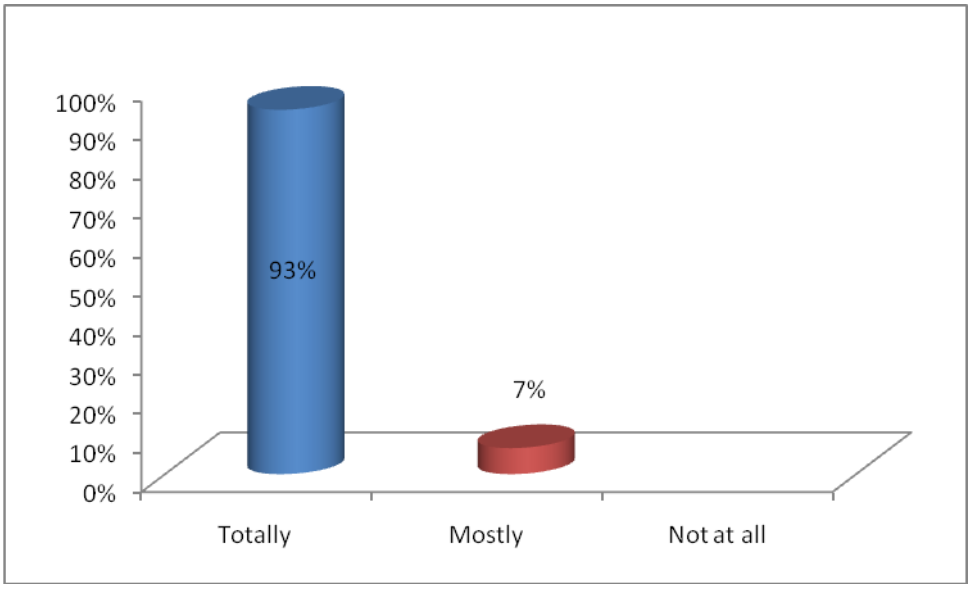

Figure 178- The planned route: The time showed for the linked transport were correct..

Almost everybody, 93% of the seniors found the time showed for the linked transport were correct. 7% of the seniors complained some renovation on the tram line so most probably that's why the bus what they had to take came not on the right time.

1.8.4-The appeared commands during the route are…

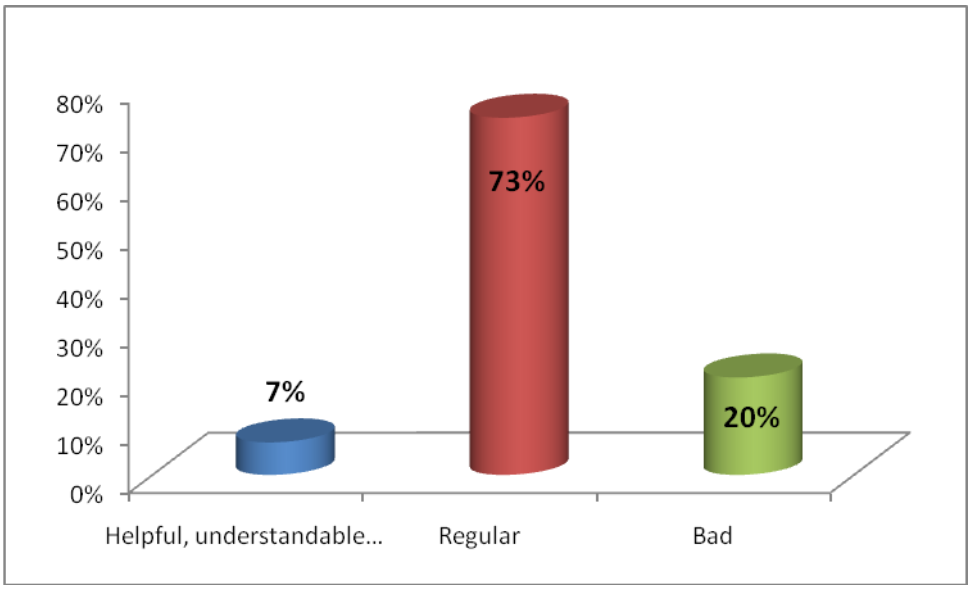

Figure 179-The planned route: The appeared commands during the route are…

Relating the commands that appear in the route 7% considered helpful and understandable and 73% regular.Which means that 80% of the seniors were satisfied. But actually everybody was complaining about the missing English translations and some wrong commands like when the app did not realized the senior position well.

1.8.5-Changing between route is..

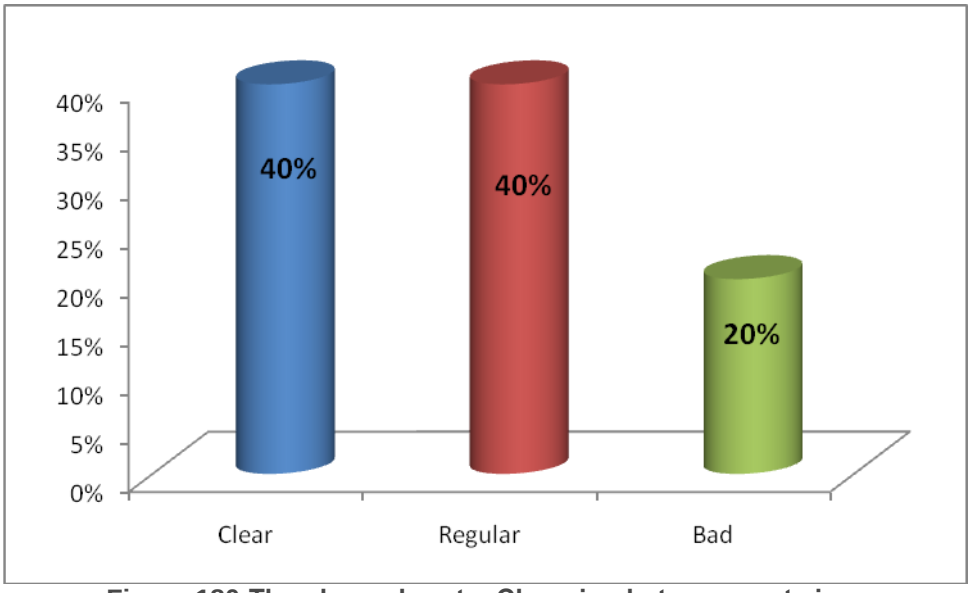

Figure 180-The planned route: Changing between route is…

Due the improvements done in WayFiS mobile application senior's answers relating this question were more positive than in the previous tests' answers. Even so only 40% said that now it is clear how to change between the routes.

1.8.6-Images and letters during the route are…

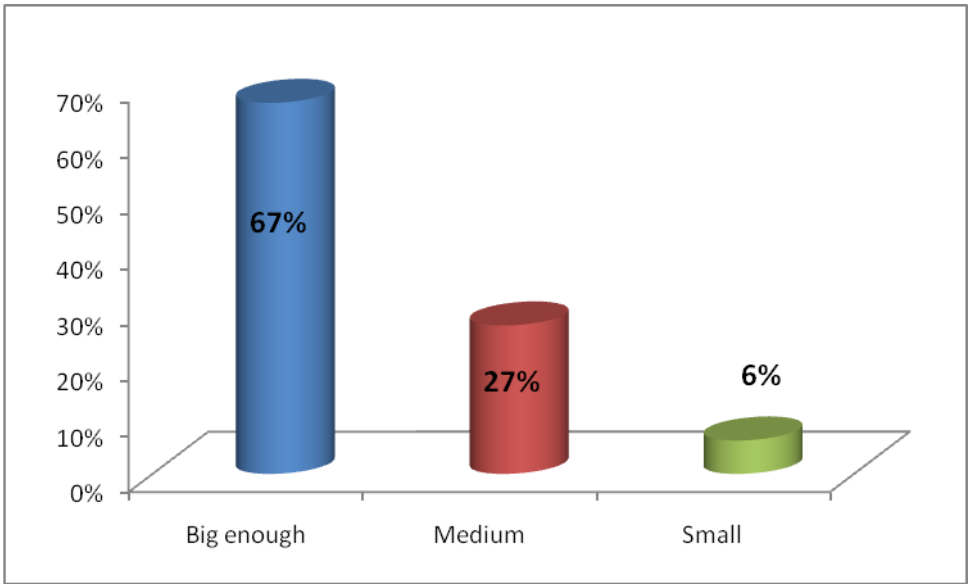

Figure 181-The planned route: Images and letters during the route are..

About images and letters during the route senior's answers were much better in the WayFiS application version 10. 67% of them found the images and letters big enough..

1.8.7-Speed changing between route is..

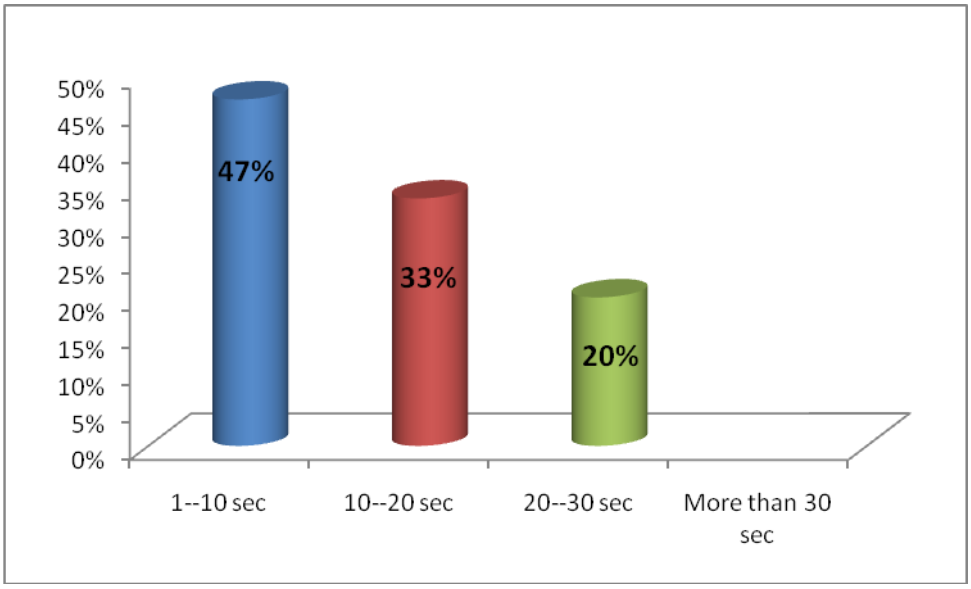

Figure 182-The planned route: Speed changing between route is..

Relating speed changing route because of the typing problem of the seniors 47% answered between 1-10 seconds, 33% between 10-20 seconds and 20% between 20-30 seconds.

1.9-Screen

1.9.1-Brightness of screen is…

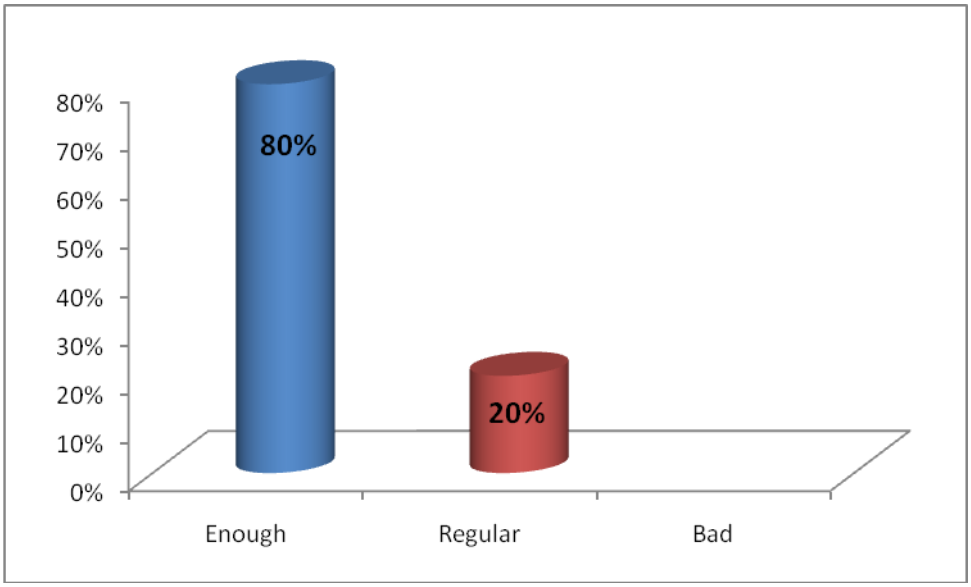

Figure 183- Screen: Brightness of screen is..

Concerning the brightness of screen 80% answered enough and 20% considered the brightness regular. They were complaining about the brightness of the screen when the weather was really sunny and they could not see the route at all.

1.10-POI's

1.10.1-POI's simbology is understandable

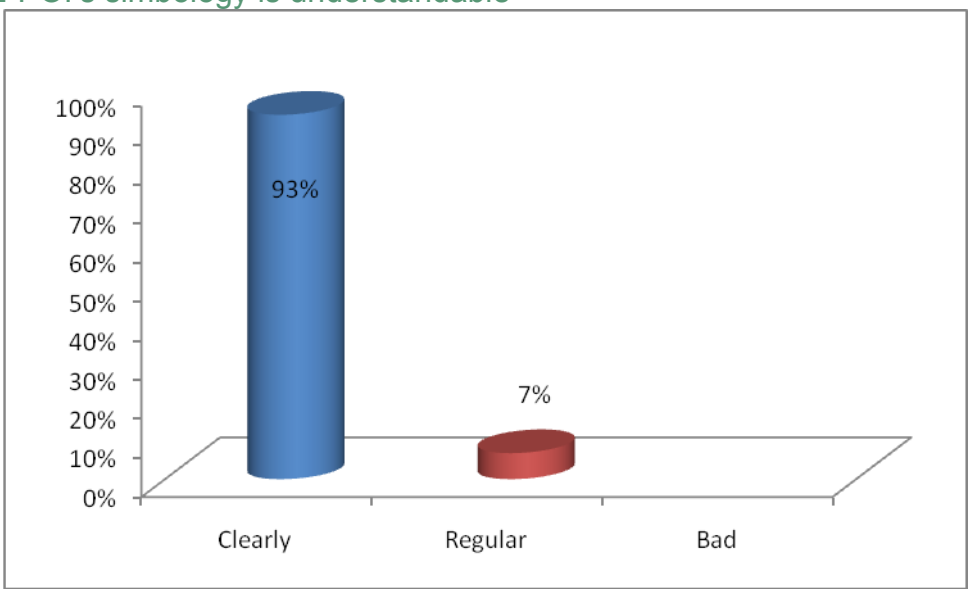

Figure 184- POI's: POI's simbology is understandable

Taking into account the improvements and the increasing of POI's in mobile application 93% of seniors tested considered POI's icons clearly understandable, and only 7% considered their simbology regular.

1.10.2-During your trip your profile settings and the POI's showed to you…?

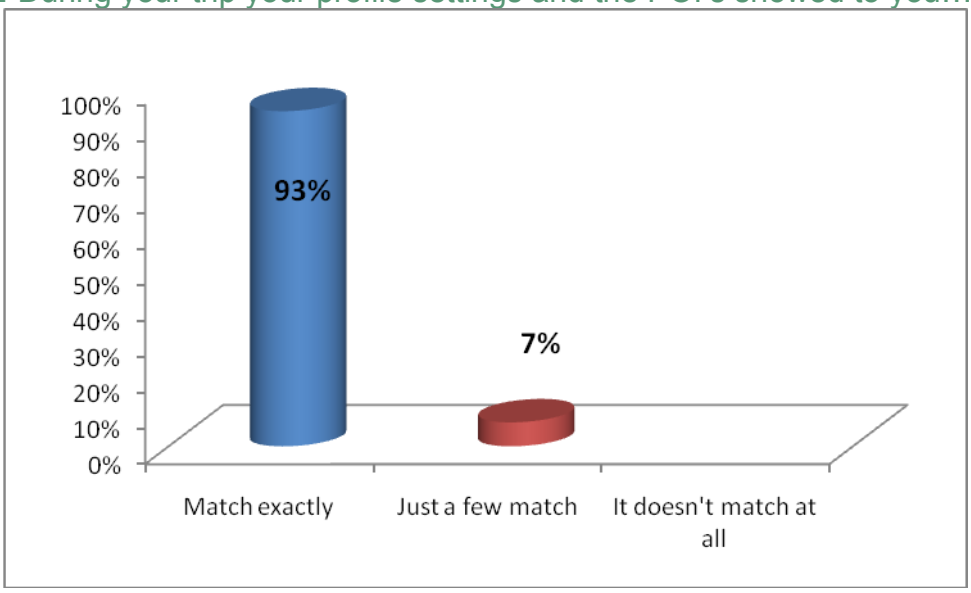

Figure 185- POI's: During your trip your profile setting and the POI's showed to you…?

93% of users tested commented POI's showed match exactly with their profile and 7% commented just a few match. They were just complaining about that what if they would like to have a PoI not just at the beginning of their route or what if they have to walk too much to reach a PoI.

1.10.3-POI's showed during your trip are..?

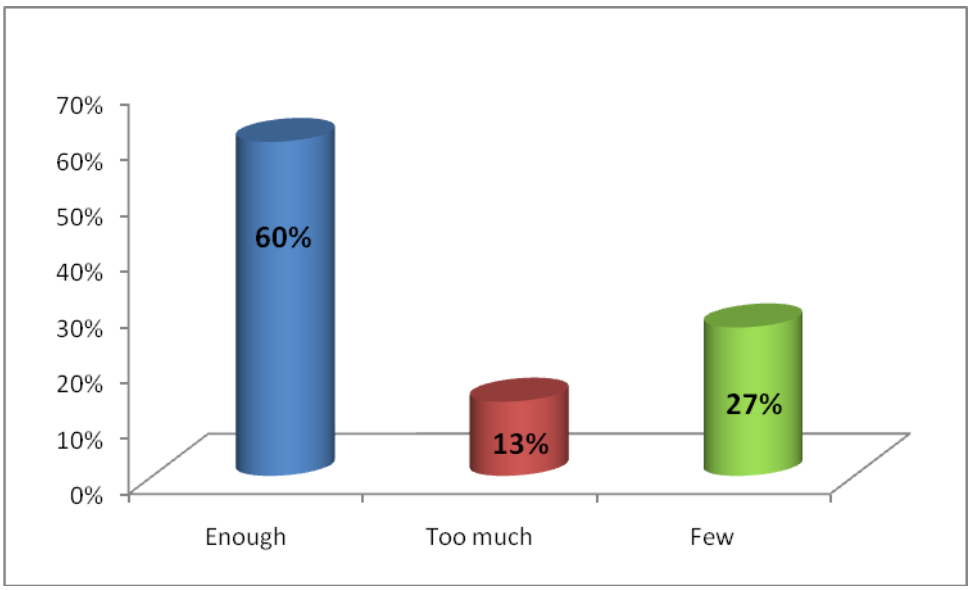

Figure 186-POI's: POI's showed your trip are..

Concerning the amount of POI's showed during the trip 60% commented they are enough and only 13% commented were too much PoI (mostly at the beginning of the route) and 27% said that there were few POI's available – only at the beginning of their route.

1.11-Routes

1.11.1-If you want to change the route to do it is…?

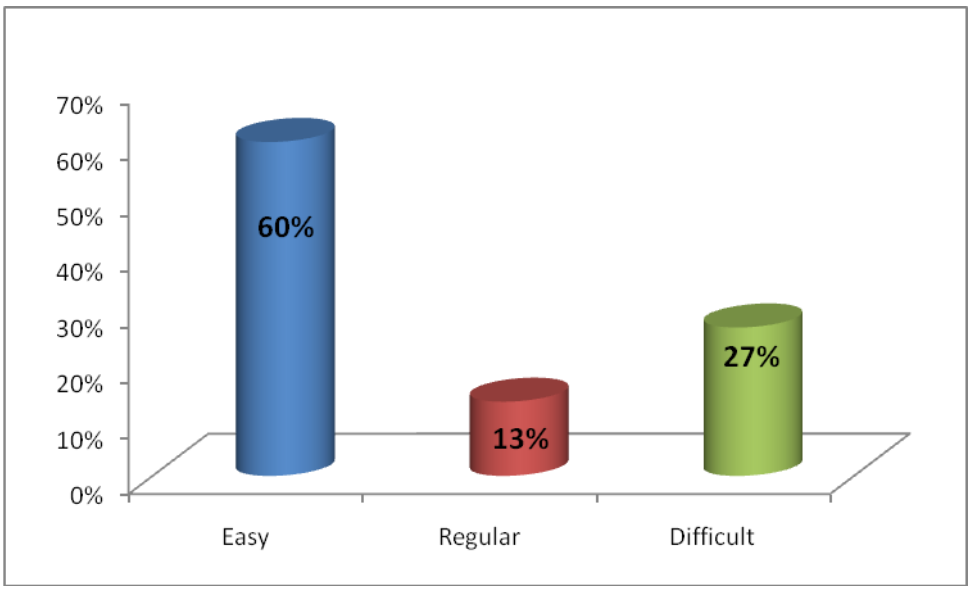

Figure 187-Routes-If you want to change the route to do it is….?

Because most of the mobility tests were done by István, the involved man who worked in the IT sector before and because it was easy for him to change the route the first category, that it is easy to change the route achieved 60%. For most of the people from the SMIMO it was still difficult because of the typing and clicking.

1.11.2-If you choose the wrong path, the time it takes to tell you is….?

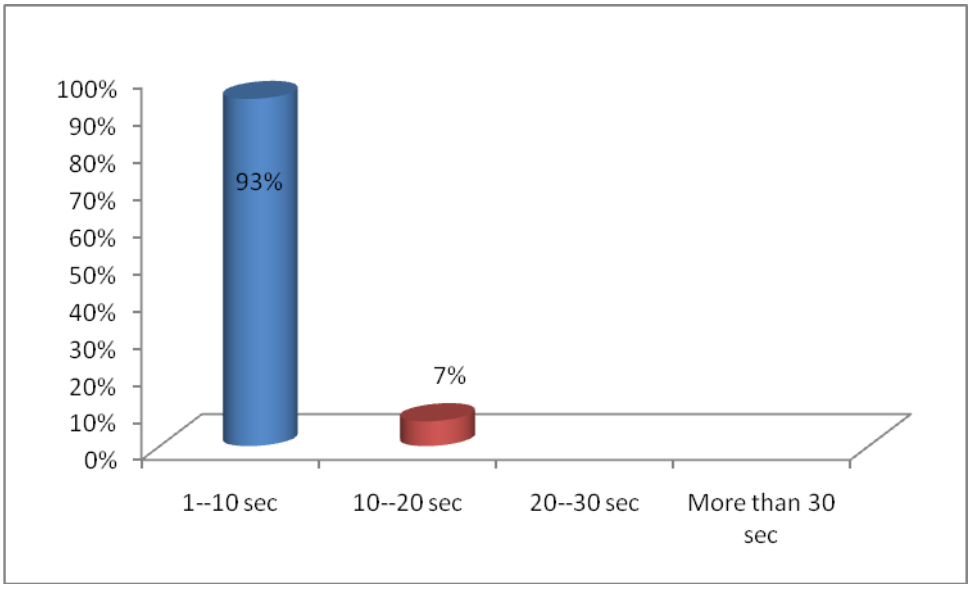

Figure 188- Routes: If you choose the wrong path, the time it takes to tell you is….?

Concerning the time to indicate a new route 93% of seniors answered between 1-10 seconds and 7% between 10-20 seconds. Sometimes it was telling that the senior is on a wrong way even if she or he was on the correct way.

.

1.12-Accessibility

1.12.1-In case you make use of a specific route because mobility aid…

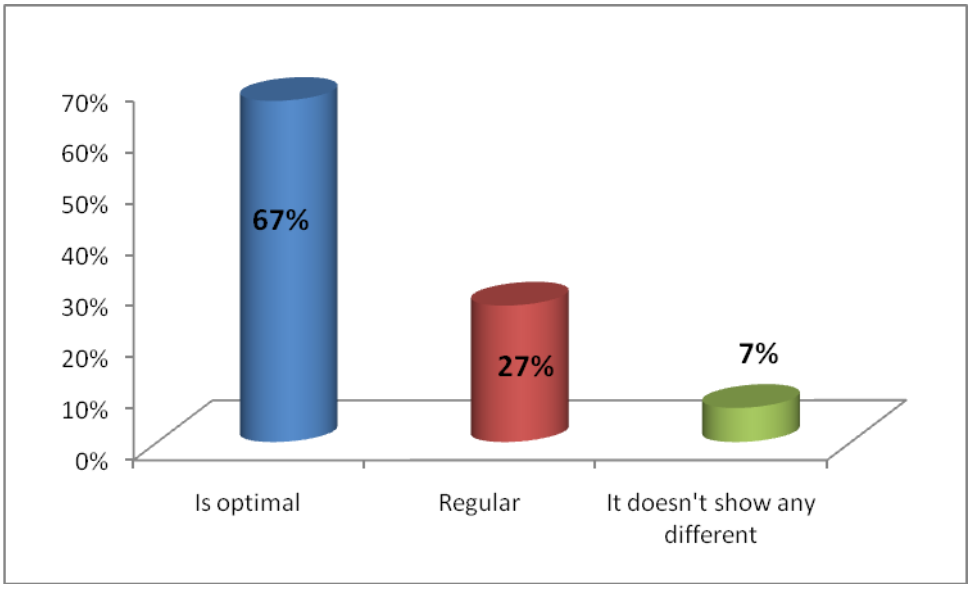

Figure 189-Accessibility.

About question related with a specific route due mobility aid 67% considered it optimal, 27% considered it regular and 7% said that it doesn't show any differences.

1.13-Sugestions, errors

- They found the keyboard very small and they complained a lot about how hard it is to type on the keyboard. They tried to use pencils or pens, but it didn't help at all.
- To increase the size of the letters:.

Image 44- Example of font size could be increased

- In the possible transportation mode you can just choose from All, Bus or Tram. They were complaining about that the Underground, Suburban railway is missing even if the planner plans the route with using the. But they can not plan their route just with the underground for example!

- Choosing between the transportation is not working because yu can choose the All and Tram and Bus at the same time.

- Listen all the indications in a foreign language which was disturbing them a lot. They always had to make the smartphone silent

- To have bigger text boxes or other translation of the texts to be able to read the words:

Image 45- Example of the needs tochange the translation

- During giving the address some other addresses from abroad appears with the autocomplete features. It was disturbing for them and prefer to be able to choose between the location/city/country where they are planning the route to avoid this unknown popped up addresses.

Image 46- Example of the problems of the autocomplete futures

- Even if it shows the correct aoutocomplete result like Ferenciektere there is still a not relevant address is the first on the list

Image 47- Example of the problems of the autocomplete futures 2.

- They would like to see or give the district and/or the house number during the navigation

Image 48- Example of the problems with same street names in different districts

- Sometimes after typing the address they were not able to see it:

Image 49- Example of the problems of the available addresses 1.

- Some places, address could not be found in the system

Image 50- Example of the problems of the available addresses 2.

- Sometimes the WayFiS shows the same travelling possibility (with the same transports) more than one time.

Image 51- Example of problems with route offers

- The number of the used transports are not good:

Image 52- Example of problems with number of the used transports

- When they have to only walk and they add intermediate point, too the walking sign appears many times which was not logical for them. Seniors prefer to have one sign if they have to walk.

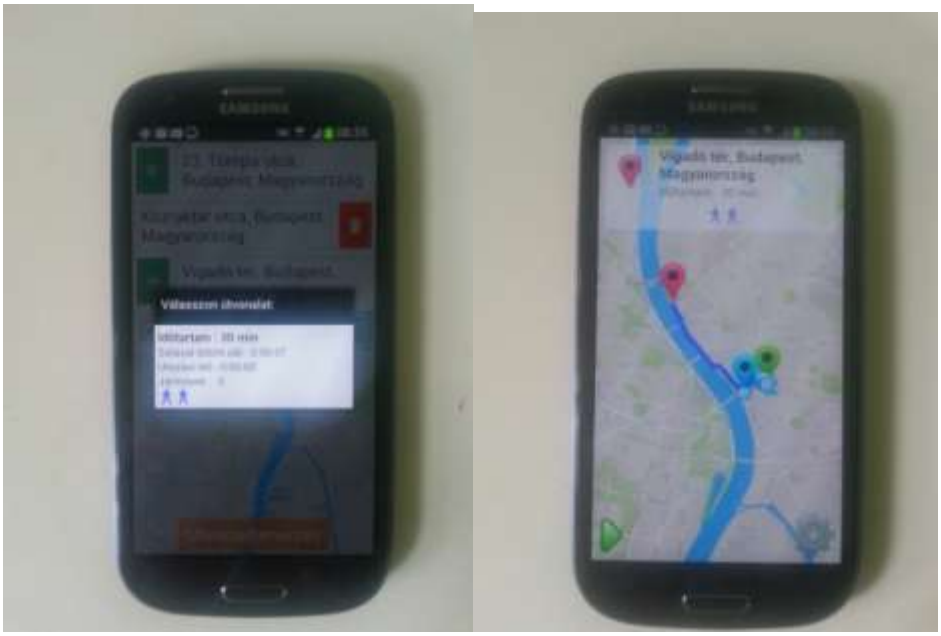

Image 53 - The showed signs are logical

- They were also complaining about giving more optional routes because it can be more friendly user.

- They would prefer to see the number of the transports when they are choosing their route, like in the 1. M2 or in the 2. M2, B+busnumber because in this case they don't have to always load the route and check the details of if.

Image 54- Example of the possibility to see the number of the transports

- some English translations are missing, like:

Image 55- English translation is missing

- It happened that the offered route by the route planner was correct but it was a route with more walking then like taking an other route. They were complaining about that changing more but walking less can be sometimes better than the speed of the time they can get somewhere because usually they are not in a hurry and walking less is more important for some of them.

- They were also saying that the calculated time was too little. Because the application counted less time than it was needed.

- They asked me if they can see the distance of the height during their walk. Because if they have to walk very high they maybe would prefer to use a public transport.

- To improve the quality of route orientation there were verified some mistakes in few cases. Because sometimes they were on the way but the application said an error like that they have to reach the departure point again::

Image 56- Example of problems with route orientation 1.

or that like they left the route

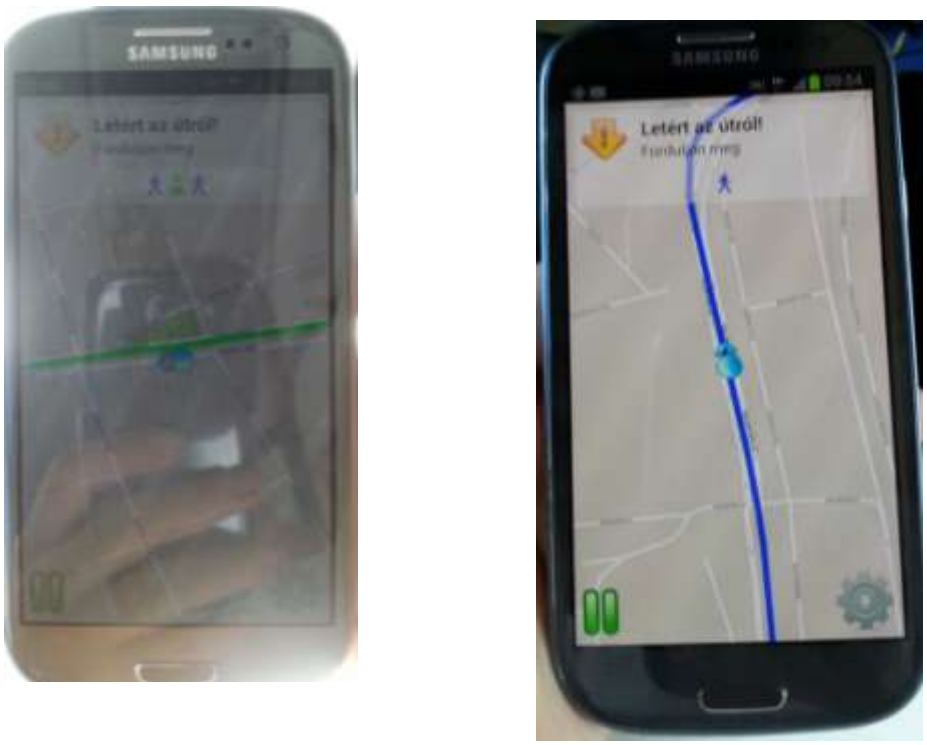

Image 57- Example of problems with route orientation 2.

or there wasn't any notification about saying that the senior was not on the way:

Image 58- Example of problems with route orientation 3.

- Seniors suggested again that it will be better if the zoom on the map will be available not only when the route is planned but also when they are going on the route.

- The route planner did not work in the underground and could not follow the senior's destination

- The planned route sometimes was not logical. Sometimes the planner said that she/he has to take of one stop earlier than it is needed and walk till the next stop. It usually happened when the next stop was the end stop of a transport. Like here the Pillangóutca is the one stope before the last on the way metro 2 then the planner said that the senior has to walk till the ÖrsVezértere, which is the end station of the metro 2.

Image 59- Example of problems with route offers

- It has happened that the router wanted to replan the route many-many times even if the seniors were on the good way. Than sometimes after that the WayFiS automatically switch of.

Image 60- Example of problems with working process

- They liked that the service showed when they arrived somewhere, but the orange button in it did not worked and sometimes after that the WayFiSfrozed or showed the errors like they had after replanning

Image 61- Example of problems with not working button

- In the application you can save many routes with the same name.

Image 62- Example of problems with route offers

- Sometimes there were no PoIs during the route like in Tökül or Csepel.

Conclusions:

- In the first phase of mobility validation seniors from the SMIMO tested commented WayFiS mobile application a little bit hard to use first of all because of their week knowledge in using smartphones and because of the usability of the smartphone. Using the keyboard is very difficult for them. And choosing the accentuated letter is even harder for them. So they suggested if the application could realize the name of the addresses without accents, too. Because it would be very helpful for them.

- Also they were complaining a lot about the letter and images size in the version 9, but in the version 10 even if they complained, too they did it less times and they could see the letters and images better.

- They found the version 10 much friendly user and simple even if for people from the SMIMO it was not so easy to use the smartphone and even if they had suggestions, found out some errors what can be solved.

- The planned route if it was just walking was usually correct they had problems only with finding the departure or destination point on the map because many of the points given by actually position was not correct. It

also happened sometimes the planner said that they left the route even if they didn't. In this case the planned started to replan the route.

- They were complaining about giving the house number or the number of the district would be very useful.
- Generally seniors considered My sites and My routes functionalities very useful to plan a route, as well autocomplete text function even if it doesn't work always very well. And even if the service accepted to save different routes under the same name.
- They found the planning from here very useful, because in this case the didn't have to go back to the main planning site.
- In the version number 10 showing the place where they arrived was very useful, but they could not push the button and then the service sometimes was frozen, sometimes just wanted to replan the route or simply switch of without any reason.
- The offered route planned by transports was not always correct in the way how it said the stop where seniors had to get off. The route planner also did not work in the underground.

Annex C – 2nd Phase Spain Results

Design Tests

Usability Tests

Mobility Tests

"This project has been funded under the third AAL call, AAL-2010-3. This publication [communication] reflects the views only of the author, and the Commission cannot be held responsible for any use which may be made of the information contained therein"

PROJECT Nº: AAL-2010-3- 014

Design Test Results (2nd Phase) Spain

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Classification	Internal
Version	V01
Total number of pages	27

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Design Tests

Spain Results

1. Pc Test

The web-application design tests (2nd phase) were developed in Puente Real (elderly home care) in Badajoz on the 1st August 2013 and were performed by 4 seniors, 3 women and 1 man with age between 70 and 94 years old. The tests weren't developed by the same seniors of 1st phase validation (Design tests). CETIEX performed a presentation of Wayfis web application and its functionalities. After that, seniors entered in the application, filled their profile settings, reviewed the web functionalities and planned some routes. Finally they reflected opinions and suggestions in design questionnaires.

Image63- WayFis PC test (Spain)

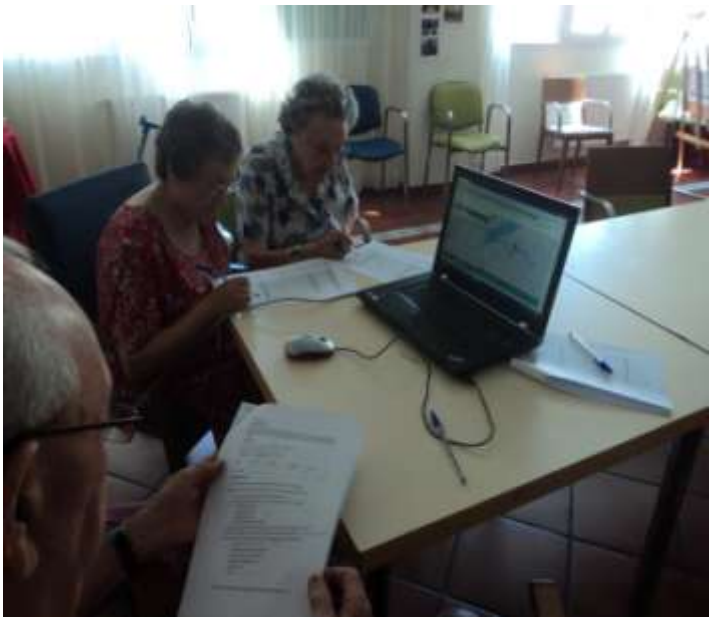

Image64- WayFiS PC test (Spain)

General	Clearly identify each point	75%
	All points are needed	100%
	The blocks are well defined	70%
	It displays all the necessary information	65%
	TOTAL	**78%**
Identity and information	Information is organized	90%
	You understand the information on the page	85%
	TOTAL	**88%**
Labeled	The images/icons are descriptive	100%
	The button tooltips are useful to understand their function	100%
	The position of the buttons is consistent with its function	75%
	Fails to distinguish clickable areas from others not	65%
	The purpose of the buttons is clear	80%
	The site is balanced, it is not overloaded	60%
	Pages titles are correct	80%
	TOTAL	**80%**
	There are navigation elements to guide the user about where and how to undo their navigation	100%
	The organizational structure and navigation is adequate	80%
	Links are easily recognizable	90%
	The structured navigation allows to entering properly	80%
	It is clear how the system shows the route	100%
	The purpose of the intermediate points is clear	80%
	It is easy to organize a trip	95%
	It is useful to have favorite routes	95%
	The relationship between the personal settings on the web and its implications for route planning is clear and useful	80%
	The management of saved items (routes, points) is accessible and easy to handle	85%

Structure and navigation	It is useful to be able to select recently used items when clicking on the address fields	100%
	View a route recently planned is simple	90%
	Navigate around the map is easy	90%
	The purpose of saving a point or route is clear	90%
	The auto complete feature is useful	95%
	It is easy to modify a trip	70%
	TOTAL	**89%**
Appearance	It is avoided overload information	60%
	There are areas in White between objects to rest for the eyes	80%
	Colors are suited to WayFiS image	85%
	There are clearly visual hierarchies established	80%
	Length page is enough	75%
	Width page is enough	65%
	TOTAL	**74%**
Accessibility	The font size is large enough to view it.	70%
	The font type, typographic effects, alignment, line width and employees make reading easily	70%
	There is a high contrast between the font color and background	80%
	Web site is compatible with different browsers	80%
	You can print the page without problems	85%
	The download time is right	100%
	TOTAL	**81%**

Table14-WayFiSResults PC Design Questionnaire 2nd phase

1.1 General

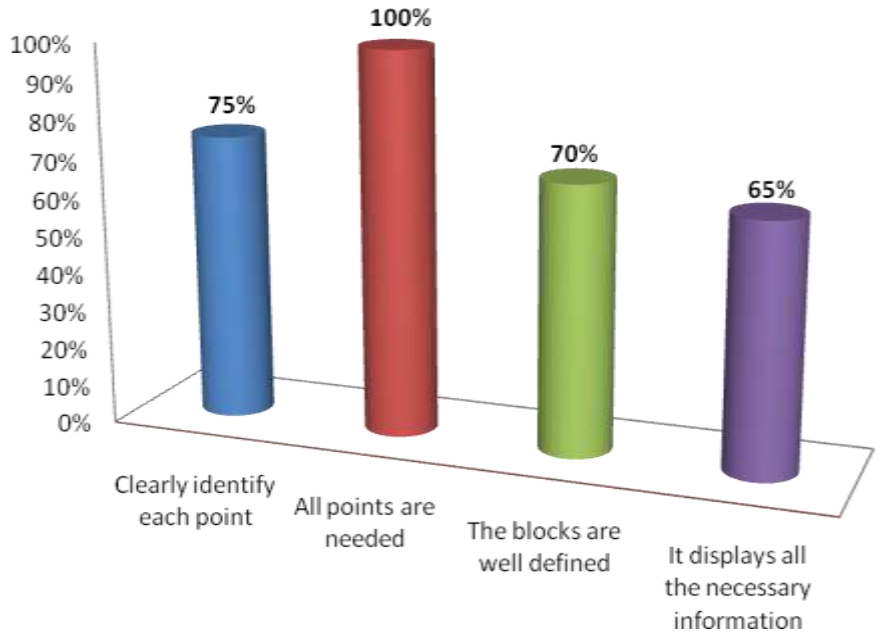

Figure 190-General PC

Concerning the general design of Wayfis web application and according to seniors answers the web application improved considerably with respect to the prototype available during the 1st phase. They pointed with 100% “all points are needed”, with 75% “clearly identify each point”, with 70% the blocks are well defined and with 65% “it displays all the necessary information”.

1.2 Identity and information

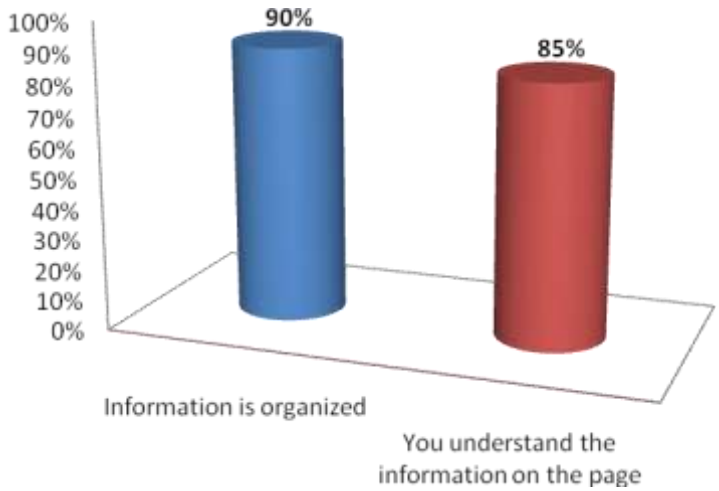

Figure 191-Identity and Information PC

About identity and information issue they considered the information is organized and understandable in the web application. Seniors only commented that in some text tables related with “My sites” and “My Routes” the font size can be improved (see examples in suggestions section 1.7).

1.3 Labeled

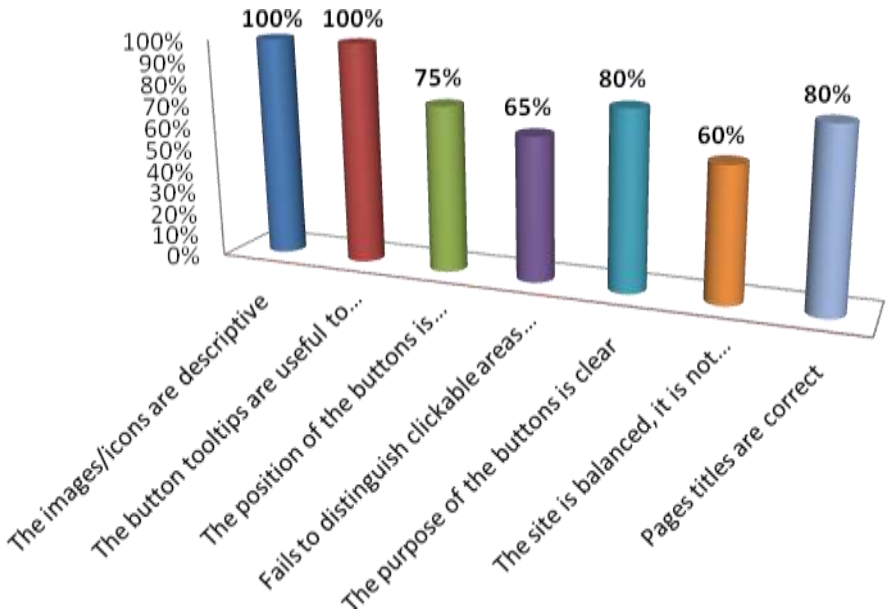

Figure 192-Labeled PC

About the labeled concerning users answers they understood perfectly the meaning of images, buttons and icons. They considered the sites well-structured and correct and understandable page titles.

1.4 Structure and Navigation

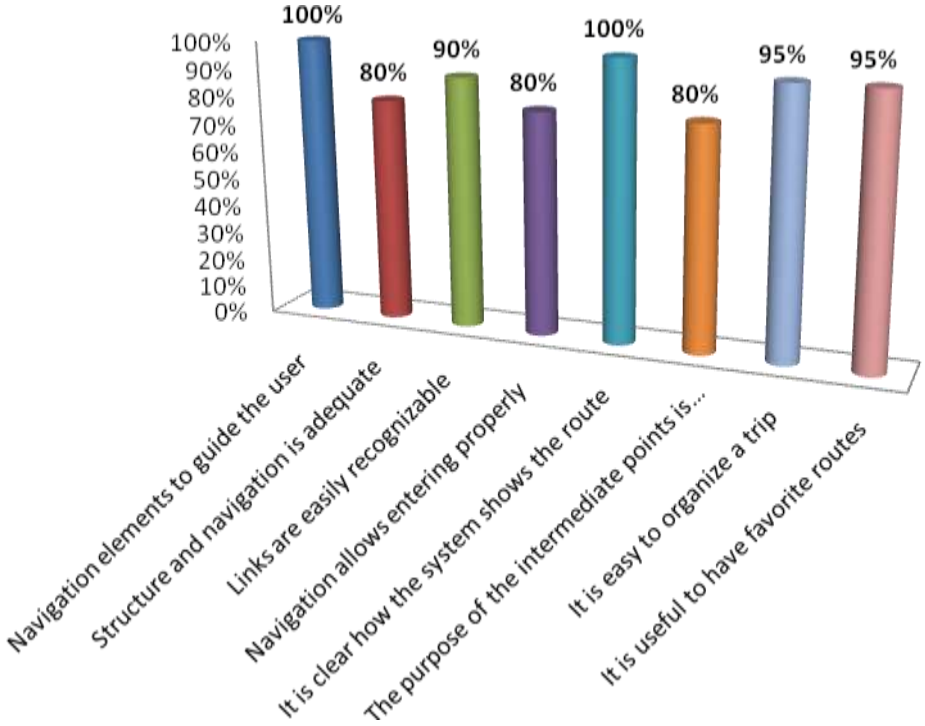

Figure 193-Structure and Navigation 1 PC

Seniors considered useful the elements to guide the users; they understood the meaning of buttons in WayFiS Trip planner and the concept of departure destination and intermediary places. They considered easy to plan, modify routes and to delete them. Seniors considered very interesting in the web application the button “My Routes” and “My sites” in order to plan their trips.

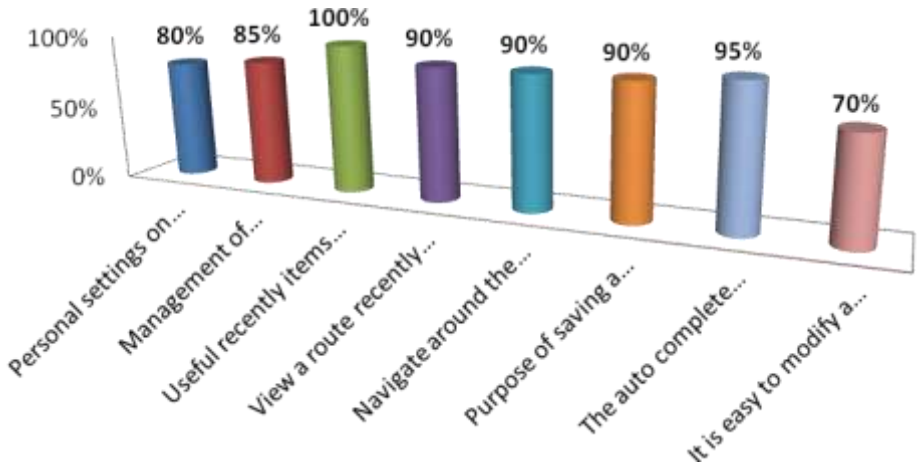

Figure 194- Structure and Navigation 2 PC

They considered the auto complete feature very useful in order to include a new address in departure, destination or intermediary point. They also considered easy to view a route recently planned, to see the route, icons and images in the map. They only suggested that the text in route indications in Wayfis planner trip could be improved, sometimes the text appears in English or a mix of English and Spanish (see example in suggestions section 1.7).

1.5 Appearance

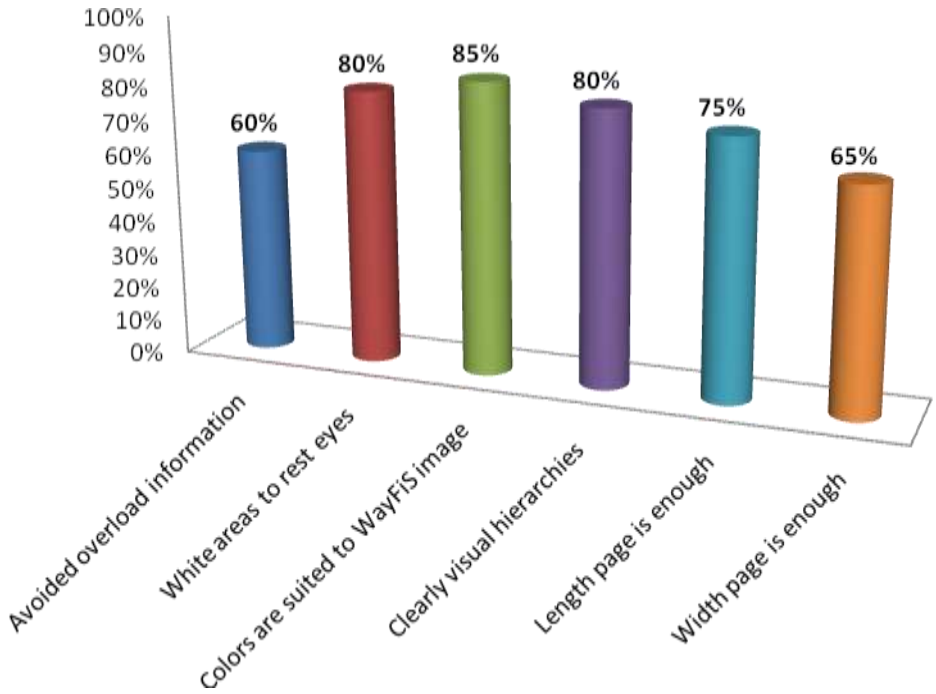

Figure 195- Appearance PC

Taking into account seniors' answers, the appearance and image of web application improved considerably according users' needs in terms of colors, font size. Some indications are included to clarify the functionalities and use of buttons and tabs and buttons' name has been changed according to the seniors' feedback in order to provide a better understanding. They considered that the page includes enough information with areas to rest the eyes and the information is well-organized.

1.6 Accessibility

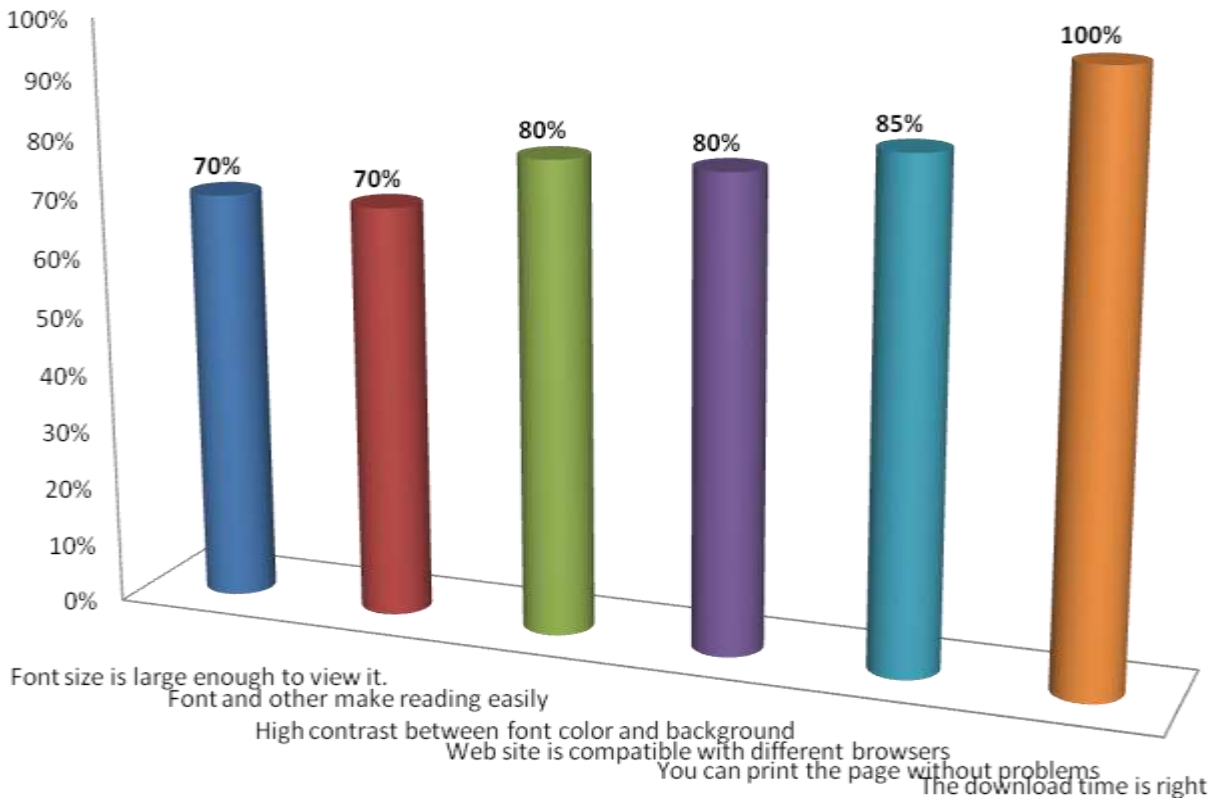

Figure 196- Accessibility PC

In terms of accessibility, they considered very interesting the option to print the route in order to help them in their trips. In terms of font colors and background they considered them good. They manifested their satisfaction with the new font size of web application that was increased to address users' suggestions during the tests done in first phase of validation.

1.7 Suggestions

- Seniors commented again the registration procedure must change it is complex for them to do the registration throughout e-mail, taking into account they don't have much knowledge about Information and Communication Technologies. They suggested doing the registration by sms for example.

- To improve the text indications in WayFiS Trip Planner, some indications appeared in English, a mix between Spanish and English.

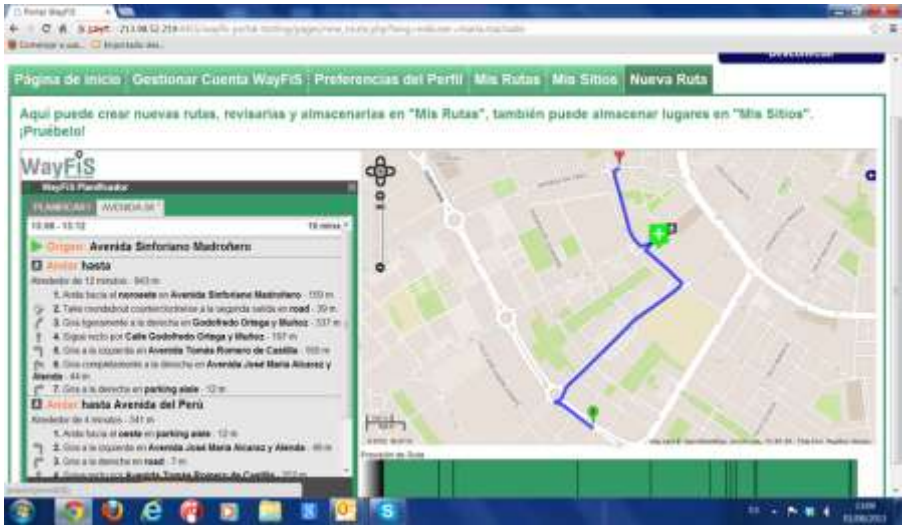

Image65-Example of English text in route indications

- To increase the font size in the text table when you choose "My sites" and you introduce an address to plan a trip.

Image66-Example of small font size in text table

- To increase the font size in the text table when you choose "My routes"and you want to choose a route saved.

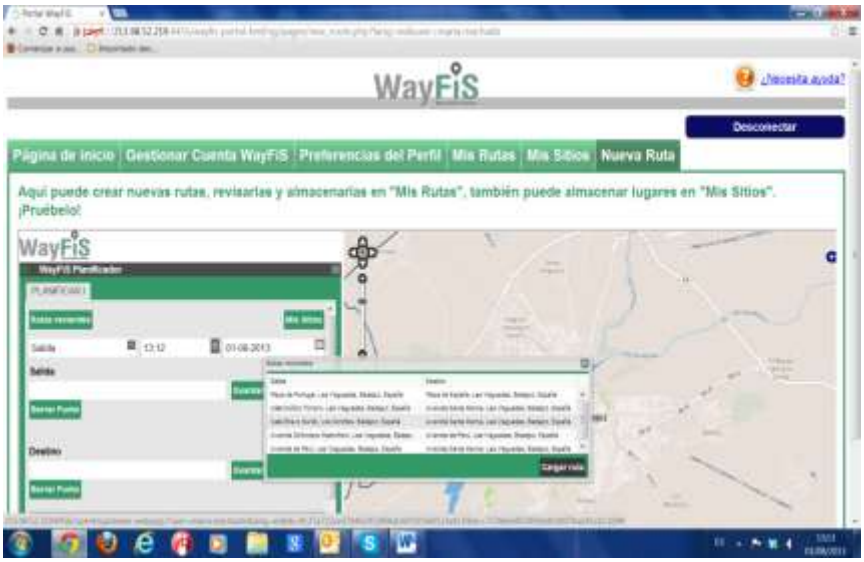

Image67- Example of small font size in text table

- To increase the font size in the text table when you want to save a favorite site.

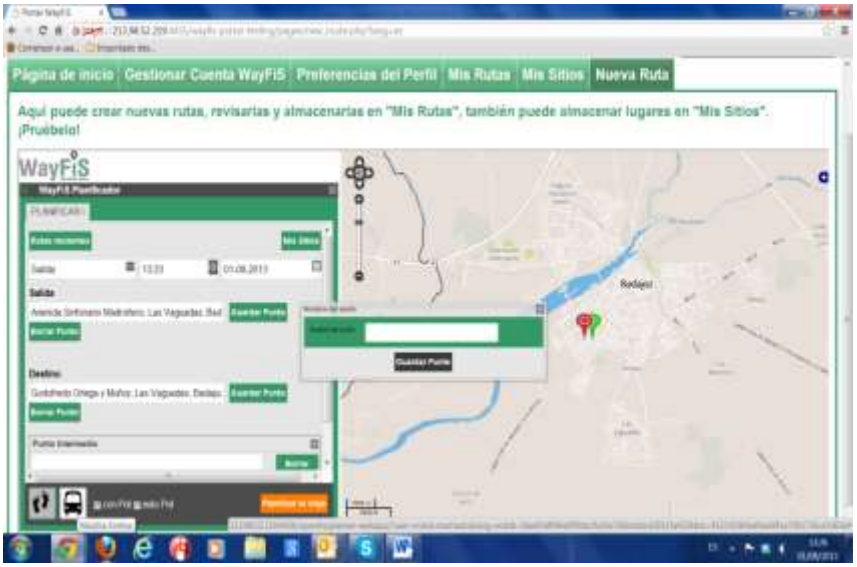

Image68- Example of small font size in text table

- To increase the font size in the text table that indicate the site is saved correctly.

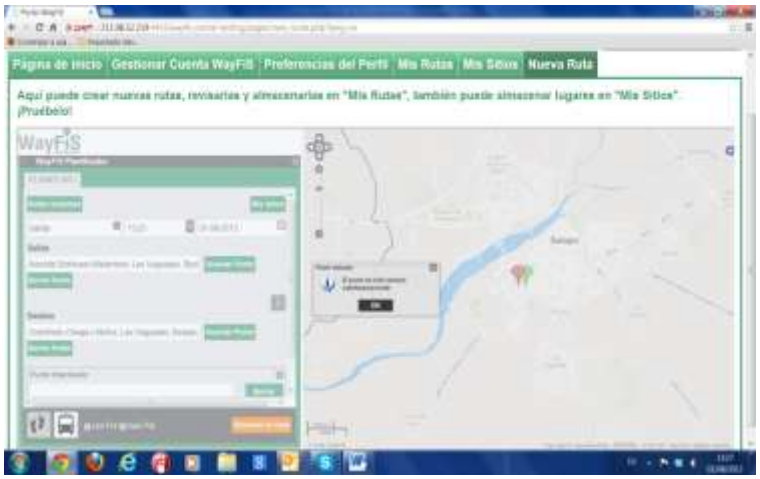

Image69- Example of small font size in text table

Conclusions

In spite the senior's difficulties in terms of eyesight and with ICT skills they agreed WayFiS web application improved significantly in terms of design and image according their needs (colors, font size, etc). They commented they like some indications included and that buttons' name is changed according better understanding.

- They considered the information is organized and understandable in the web application.

- Seniors understood perfectly the means of images, buttons and icons. They considered the sites well-structured and correct and understandable page titles.

- Seniors tested understood the meaning of buttons in Wayfis Trip planner and the concept of departure destination and intermediary places.

- They considered easy to plan, modify routes and to delete them.

- Seniors considered very interesting in the web application the button "My Routes" and "My sites" in order to plan their trips, as well print button in order to have a paper indication as complement along their trips.

- They considered the auto complete feature very useful in order to include a new address in departure, destination or intermediary point.

- Seniors also considered easy to view a route recently, to see the route, icons and images and in the map

- Seniors considered very useful the POI's functionality, obtaining recommended PoIs for your planned route.

2 Mobile Test

The design mobile tests (2nd phase) were developed in Puente Real (elderly home care) in Badajoz on 1st August 2013 by four seniors, 3 women and 1 man with age between 70 and 94 years old. CETIEX did a presentation of Wayfis mobile application and it was done a previous focus group. Seniors reviewed mobile application functionalities and planned some routes. In order to analysed mobile app it was used Wayfis application V9 and used 4 smart phones with Android System: 2 Samsung Galaxy SIII Mini, 1 Samsung Galaxy SSCL and 1 Samsung Galaxy SL Plus.

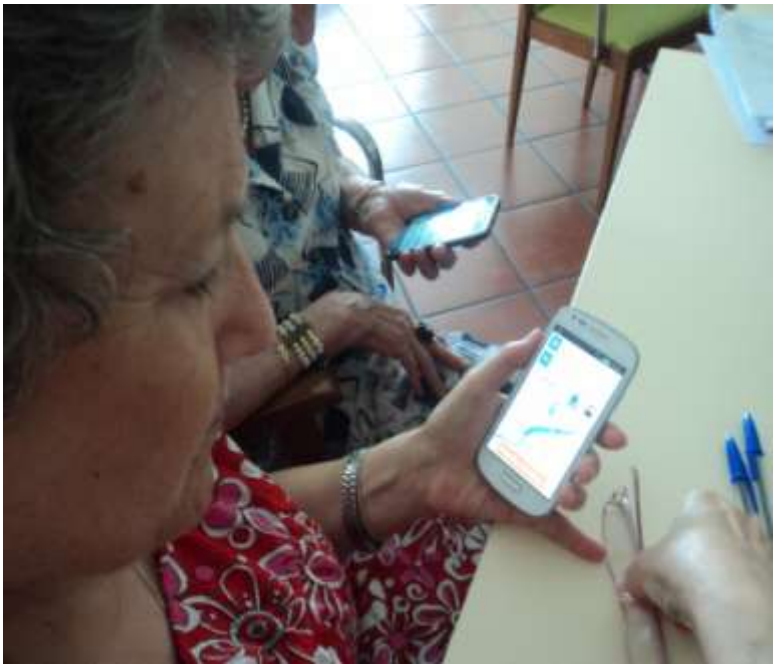

Image70- WayFiS Mobile test (Spain)

Image71- WayFiS Mobile test (Spain)

General	Clearly identify each point	95%
	All points are needed	85%
	The blocks are well defined	85%
	It displays all the necessary information	80%
	TOTAL	**86%**
Identity and information	Information is organized	85%
	You understand the information on the page	90%
	TOTAL	**88%**
Labeled	The images/icons are descriptive	80%
	The button tooltips are useful to understand their function	90%
	The position of the buttons is consistent with its function	85%
	Fails to distinguish clickable areas from others not	80%
	The purpose of the buttons is clear	75%
	The site is balanced, it is not overloaded	70%
	Pages titles are correct	80%
	TOTAL	**80%**
	There are navigation elements to guide the user about where and how to undo their navigation	85%
	The organizational structure and navigation is adequate	80%
	Links are easily recognizable	70%
	The structured navigation allows to entering properly	85%
	It is clear how the system shows the route	95%
	The purpose of the intermediate points is clear	70%
	It is easy to organize a trip	85%
	It is useful to have favorite routes	90%
	The relationship between the personal settings on the web and its implications for route planning is clear and useful	90%
	The management of saved items (routes, points) is accessible and easy to handle	75%
	It is useful to be able to select recently used items when clicking on the address fields	100%

Structure and navigation	View a route recently planned is simple	75%
	Navigate around the map is easy	90%
	The purpose of saving a point or route is clear	75%
	The auto complete feature is useful	90%
	It is easy to modify a trip	80%
	TOTAL	**83%**
Appearance	It is avoided overload information	70%
	There are areas in White between objects to rest for the eyes	70%
	Colors are suited to WayFiS image	80%
	There are clearly visual hierarchies established	75%
	Length page is enough	70%
	Width page is enough	60%
	TOTAL	**71%**
Accessibility	The font size is large enough to view it.	75%
	The font type, typographic effects, alignment, line width and employees make reading easily	70%
	There is a high contrast between the font color and background	80%
	Web site is compatible with different browsers	80%
	You can print the page without problems	80%
	The download time is right	95%
	TOTAL	**80%**

Table 15-WayFiS Results Mobile Design Questionnaire

2.1 General Mobile

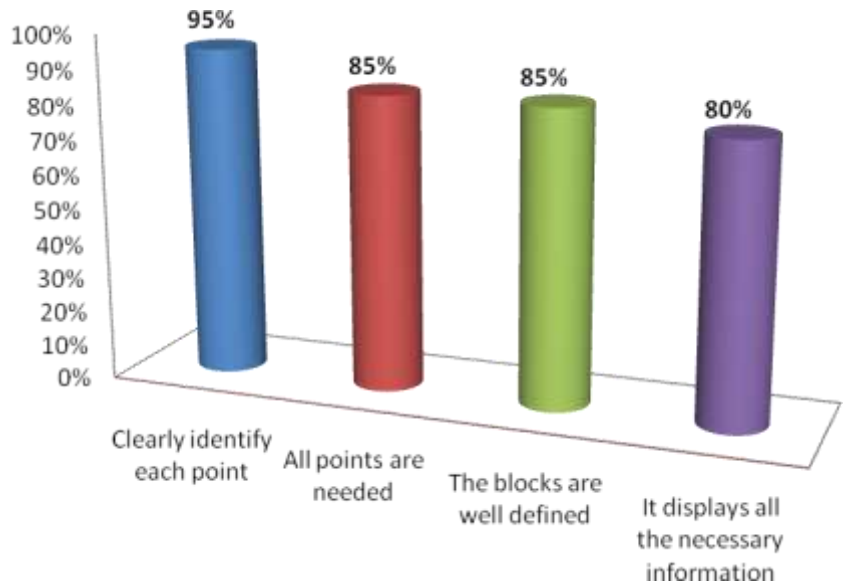

Figure 197- General Mobile

In the mobile design tests seniors considered the information and buttons showed clear in order to identify each point. They considered the blocks are well defined as it happened with web application and all the information showed necessary.

2.2 Identity and Information Mobil

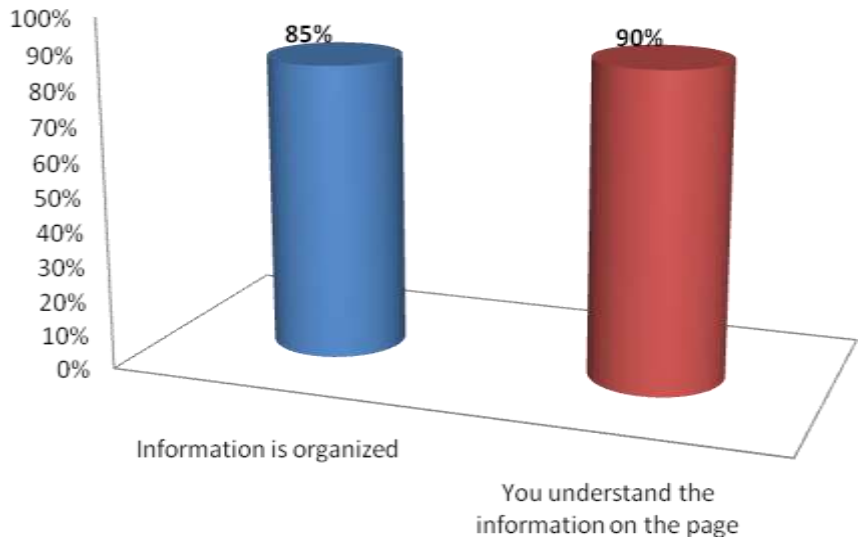

Figure 198-Identity and Information Mobile

They considered the information is organized and understandable in order to use mobile application. They considered very useful the POIs and the coincidence of them with their profile setting.

2.3 Labeled

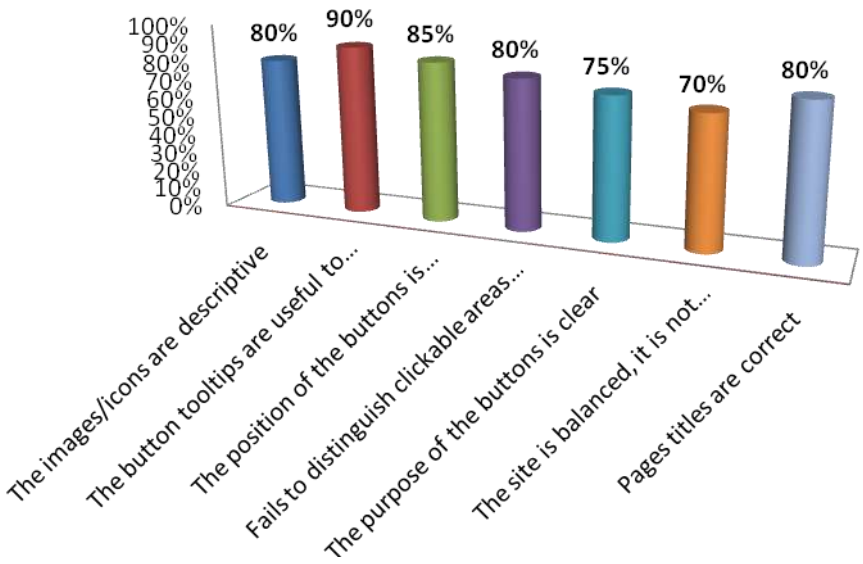

Figure 199-Labeled Mobile

Concerning the labeled users considered the images and icons descriptive. The position and purpose of buttons are clear and consistent with its function and useful to understand. They achieved to distinguish the clickable areas from others that are not. In general they commented in the mobile app the site is balanced, buttons, icons and images meanings understandable.

2.4 Structure and Navigation Mobile

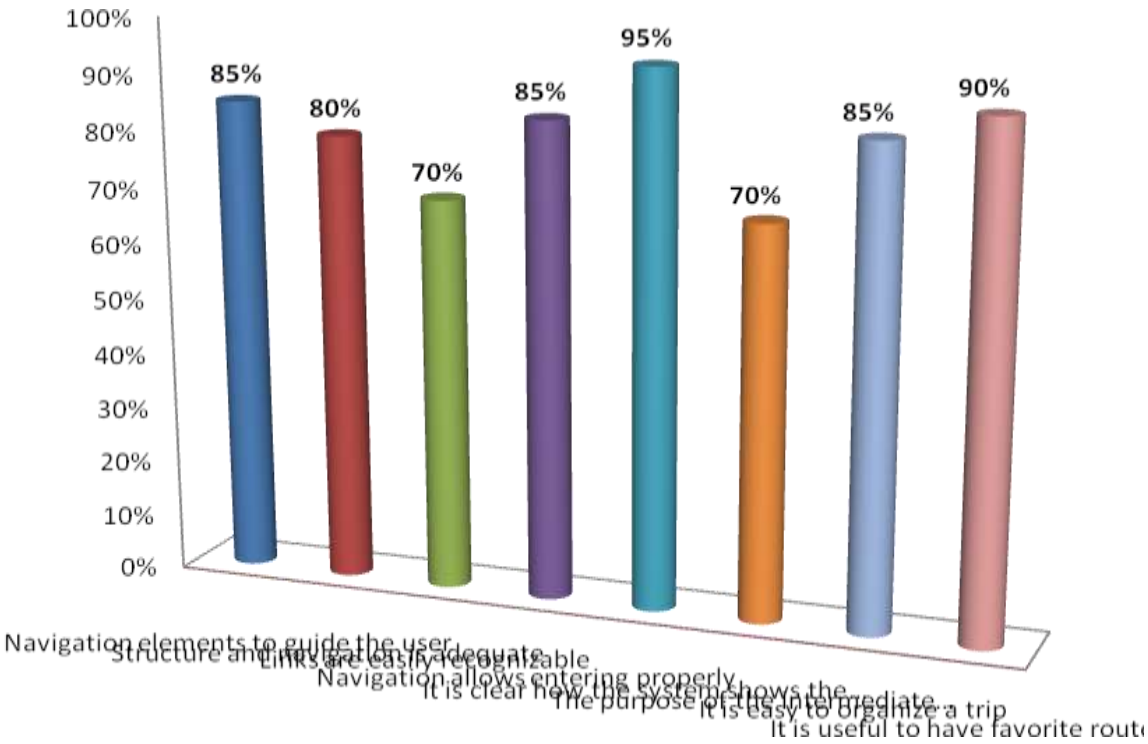

Figure 200- Structure and Navigation Mobile 1

About structure and navigation seniors commented is adequate. Navigation elements are useful to help them in order to plan a route. They understood how to plan the route, with GPS, from “My Sites” and “My Routes” and when they have to write the address in departure and destination text table. They also knew POI’s and intermediate point concept. In general they considered easy to plan a route in mobile application.

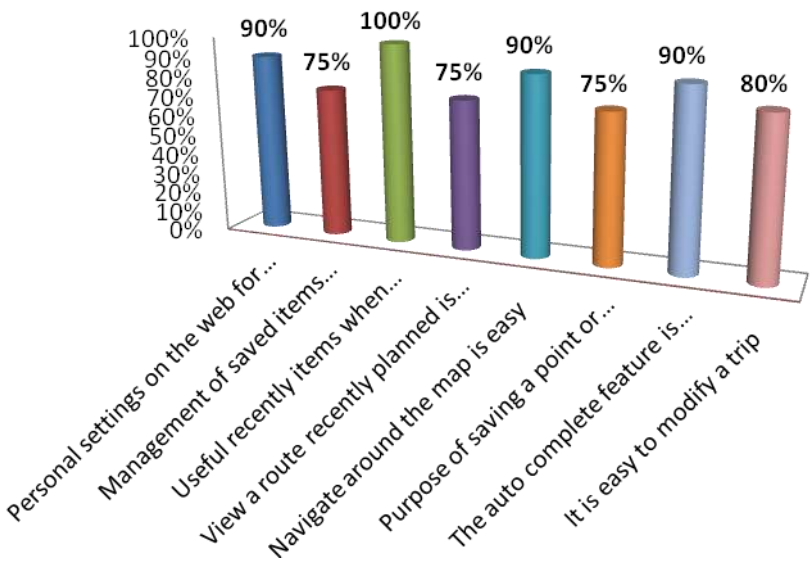

Figure 201-Structure and Navigation Mobile 2

As it happened in web application, design tests they considered a nice functionality “My routes” and “My places” in order to facilitate the route plan. Seniors considered very useful the autocomplete feature in order to complete an address in text table. They considered to navigate in the map is easy as well to modify a route. Users also commented very interesting in the application the button “back” and “new route from here”.

2.5 Appearance

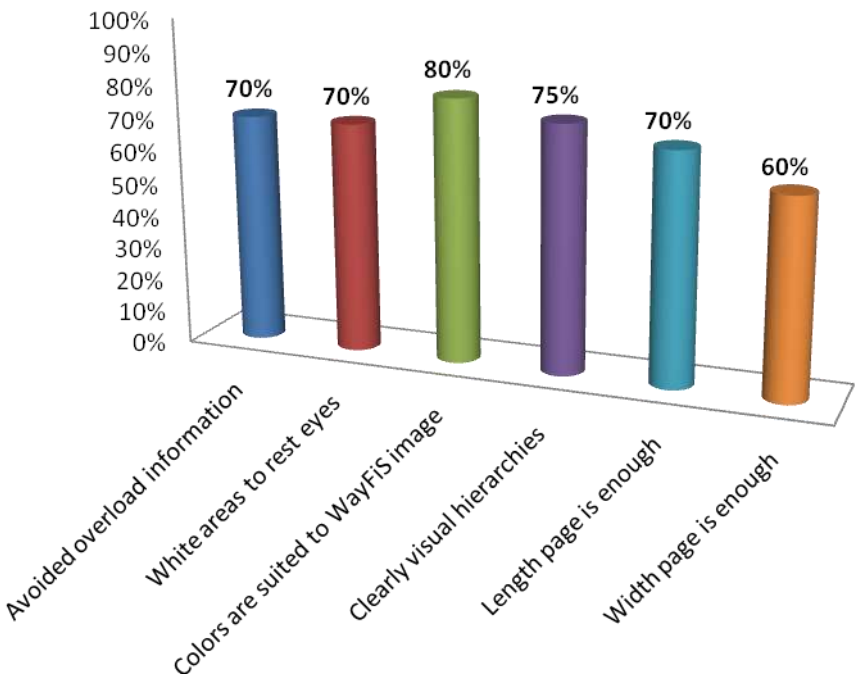

Figure 202-Appearance Mobile

In terms of appearance mobile application improved considerably relating the tests done in the first phase of the validation. Seniors in this validation considered avoided overload information, there are enough white areas to rest eyes, the hierarchies are clearly identified and the length and width page is enough taking into account the increased font size.

2.6 Accessibility

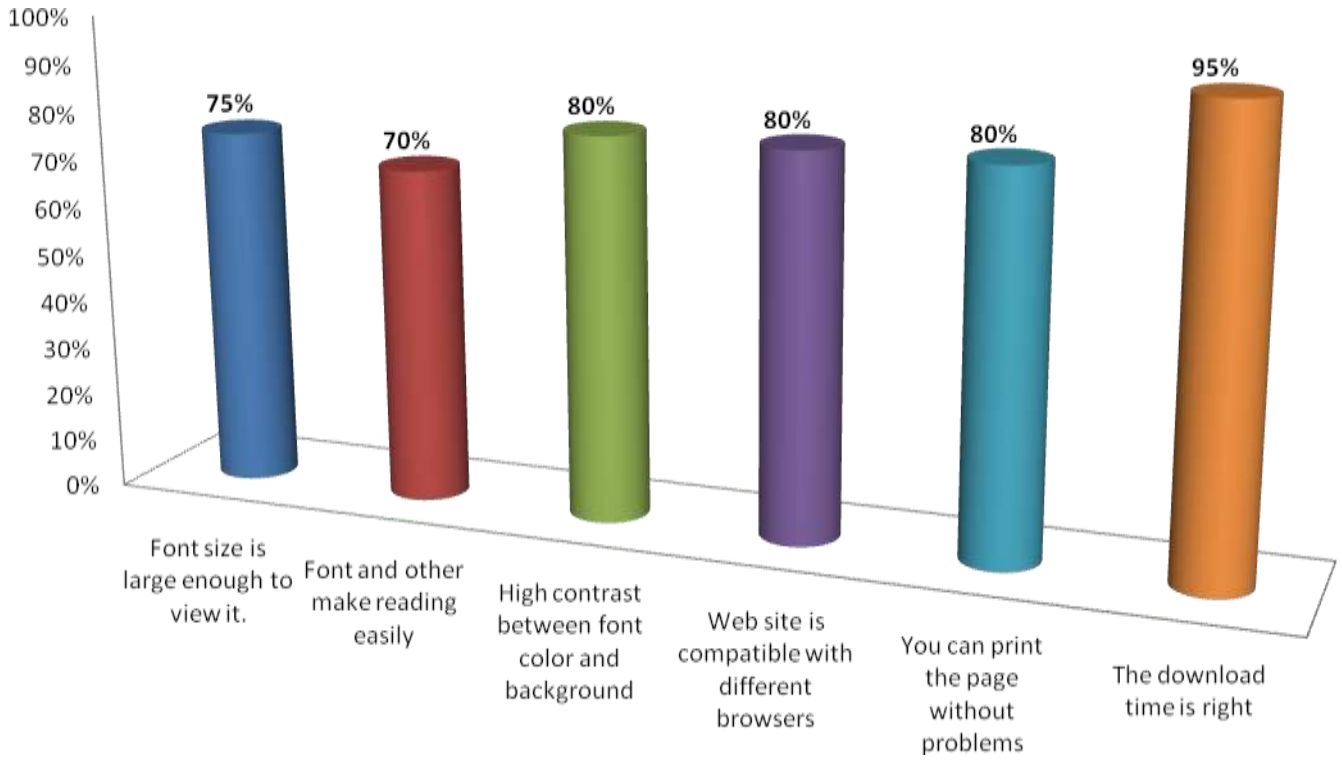

Figure 203-Accessibility Mobile

In terms of accessibility and as it can be analyzed in senior's answers they considered the font size much better in order to read the texts, the contrast between font color and background enough now and especially they considered the download time application very quick.

2.7 Suggestions

- Seniors suggested to translate to Spanish the text in above commands and text tables when the route beginning.

Image72-Example of indications with text in English

- To increase the contents size in settings command in the route planned.

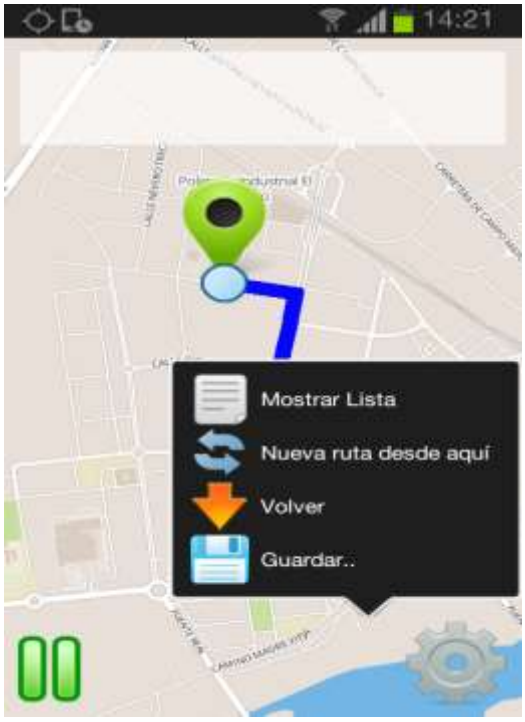

Image73-Example of font size could be increased

Conclusions

In overall the seniors commented WayFiS mobile application improved considerably, now is friendlier to use and adapted to their needs.

- They were more comfortable with bigger font size.

- They understood now better the mobile application structure and organization as well the concepts of buttons and areas.

- They considered very useful the functionalities “My Routes” and “My Sites”, as well the buttons “back” and “New route from here”

- Users considered the images and icons descriptive and enough to manage mobile application and to plan a route.

"This project has been funded under the third AAL call, AAL-2010-3. This publication [communication] reflects the views only of the author, and the Commission cannot be held responsible for any use which may be made of the information contained therein"

PROJECT Nº: AAL-2010-3- 014

Usability Tests Results (2nd Phase) Spain

Start Date of Project : 01/03/2011 **Duration :** 30 months

PROJECT FUNDED BY THE AAL JOINT PROGRAMME	
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Author(s)	CETIEX
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Version	V01
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Partner	Authors
CETIEX	Maria João Machado, Irene Fritzen

Usability tests-Spain Results

1. Mobile tests

The usability tests were developed in Puente Real facilities (elderly home care) in Badajoz on 1st August 2013 on morning by six seniors 3 men and 3 women with age between 70 and 94 years old. It was developed a previous group with seniors to explain the Wayfis mobile application functionalities. In order to develop usability tests it was used the Wayfis mobile application V9, and 4 smartphones with Android System: 2 Samsung Galaxy SIII Mini, 1 Samsung Galaxy SSCL and 1 Samsung Galaxy SL Plus.

Image 74-Wayfis Usability tests (Spain)

Image 75-Wayfis Usability Tests (Spain)

USABILITY QUESTIONNAIRE		
Date		
Name		
Age		
Gender	Male 50% Female 50%	
Place of residence	Big city (over 500 thousand) medium sized city (100-500 thousand) small town (10-100 thousand) village	 100%
Level of education	No education/primary school Secondary school College (diploma) University	 17% 66% 17%
Currentemployment status	Free lancer Employee Civil servant Labourer Housewife/-man Retired other_____	 17% 83%
Computerskills	Very high Rather high Rather low Very low Non	 17% 83%
First steps in the app	Time to switch on 1-10 seconds 10- 20 seconds 20 – 30 seconds More than 30 seconds	 100%

	Registration	
	☐ Easy	
	☐ Rather hard	17%
	☐ Very hard, because	83%
	Signing in	
	☐ Easy	100%
	☐ Rather Hard	
	☐ Very hard, because	
Enter a departure, destination	Usability	
	☐ Easy to use	67%
	☐ rather hard to use	33%
	☐ hard to use, because	
	Changing of them(Departure and Destination address)	
	☐ Easy	67%
	☐ Rather hard to do	33%
	☐ Hard, because	
	The way how they appear color on the map is	
	☐ Good	50%
	☐ Good enough	50%
	☐ Could be better, like	
	The way how they appear size on the map is	
	☐ Good	83%
	☐ Good enough	17%
	Could be better, like	
Route	The way how it appear color on the map is	
	☐ Good	83%
	☐ Good enough	17%

	☐ Could be better, like	
	The way how it appear size the map is	
	☐ Good	83%
	☐ Good enough	17%
	☐ Could be better, like	
	If you want to change the route to do it is….?	
	☐ Easy	17%
	☐ Regular	83%
	☐ Difficult, because.....	
	The color of the arrows showed are…	
	☐ Good	33%
	☐ Good enough	67%
	☐ Could be better, like	
	The meanings of the arrows showed are…	
	☐ Good	50%
	☐ Good enough	50%
	☐ Could be better, like	
Screen	Images and letters are…	
	☐ Big enough	
	☐ Medium	17%
	☐ Small	83%
	The font type is …….	
	☐ Good	67%
	☐ Good enough	33%
	☐ Could be better, like	

	Brightness of the screen is…	
	☐ Enough	33%
	☐ Regular	67%
	☐ Bad	
	The information on the sites are	
	☐ Enough	67%
	☐ Regular	33%
	☐ Toomuch	
POI's	Your profile settings and the POI's showed to you…?	
	☐ Match exactly	100%
	☐ Just a few match	
	☐ It doesn't match at all	
	POI'ssimbologyisunderstable…?	
	☐ Clearly	83%
	☐ Regular	17%
	☐ Not at all	
	POI's Showed along the route are…?	
	☐ Enough	67%
	☐ Toomuch	33%
	☐ Few	
Suggestions	Please feel free to share your opinion about the route plan	

Table 16-Wayfis Usability tests results (2nd Phase)

1.1 Gender

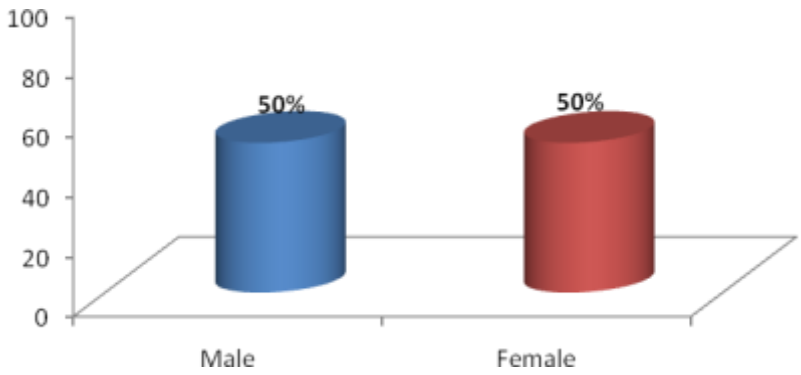

Figure 204-Gender

Concerning the gender of seniors 50% were men and 50% women.

1.2-Place of Residence

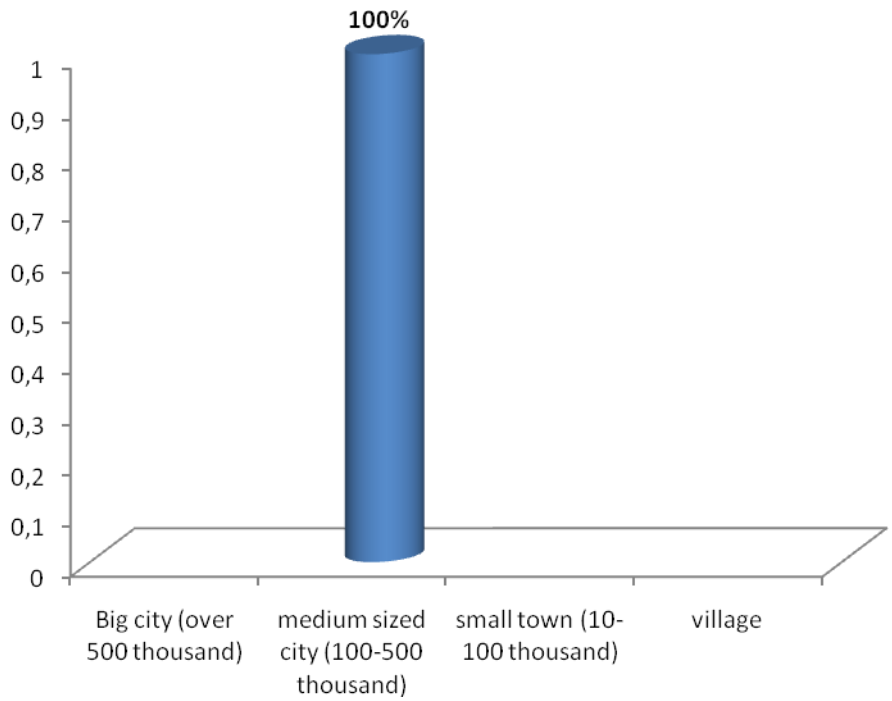

Figure 205-Place of Residence

The 100% of seniors tested have their place residence in a medium size city.

1.3-Level of Education

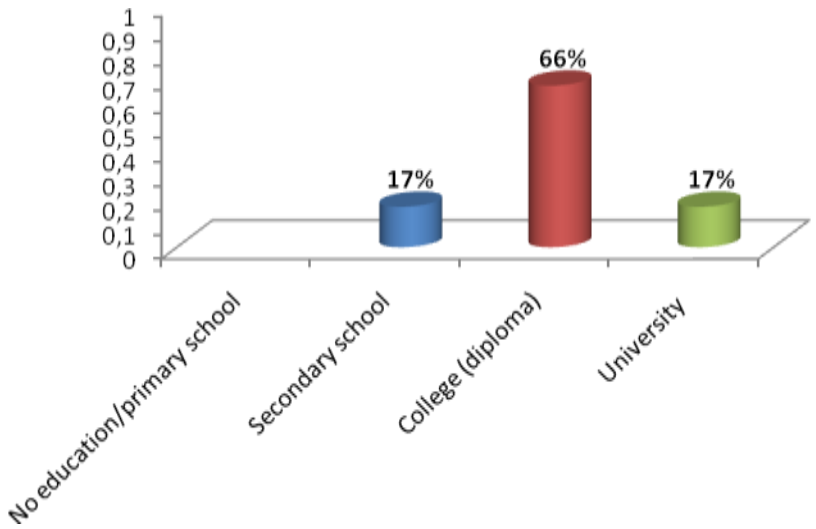

Figure 206-Level of education

About level of education 66% of seniors had college degree studies, 17% university and 17% secondary school.

1.4-Current employment status

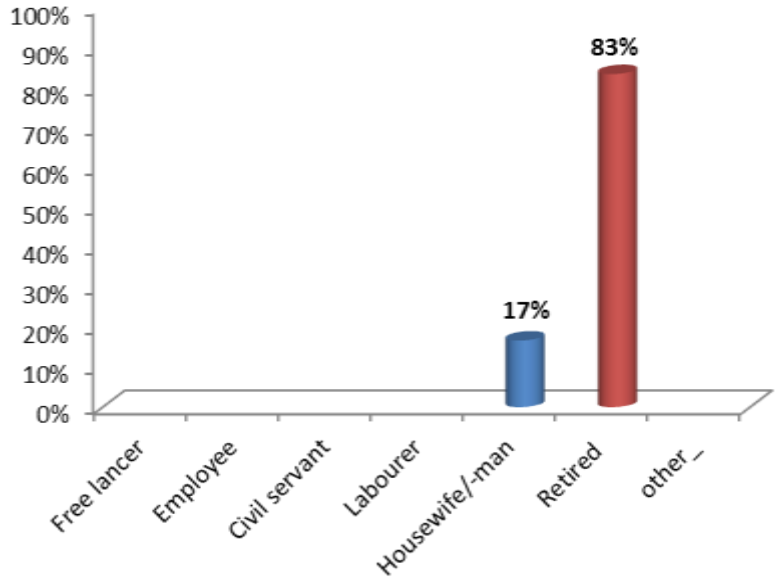

Figure 207-Current employment status

About their employment status 83% are retired and 17% are housewife/man.

1.5-Computer skills

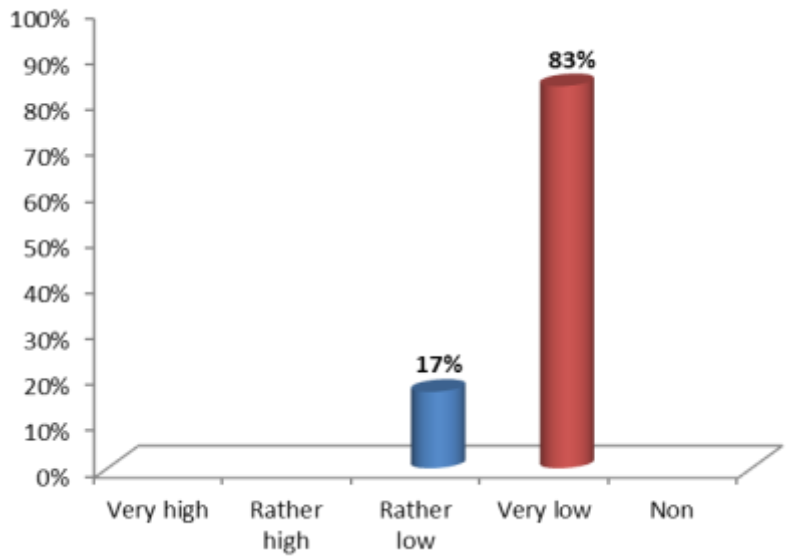

Figure 208-Computer skills

In overall the computer skills of seniors tested is very low, 83% are very low and 17% rather low.

1.6-First steps in the app

1.6.1-Time to switch on

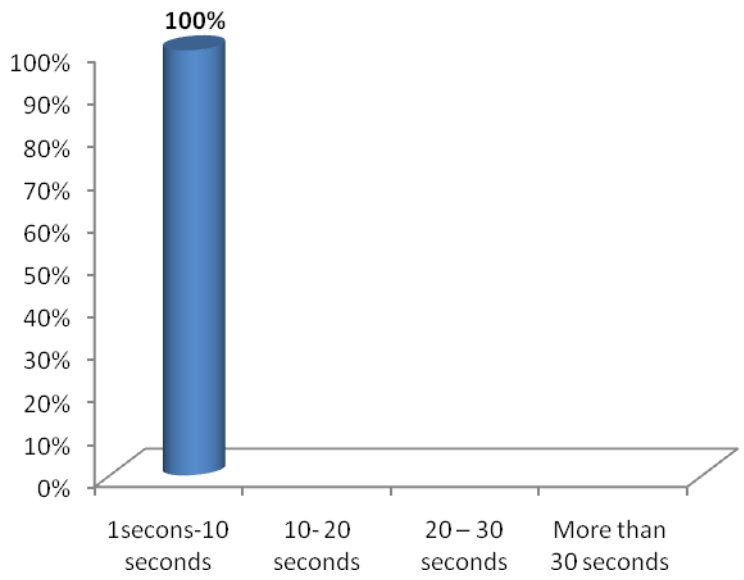

Figure 209-First steps in the app:Time to switch on

Concerning the time to switch the application 100% commented is very quick between 1-10 seconds.

1.6.2-Registration

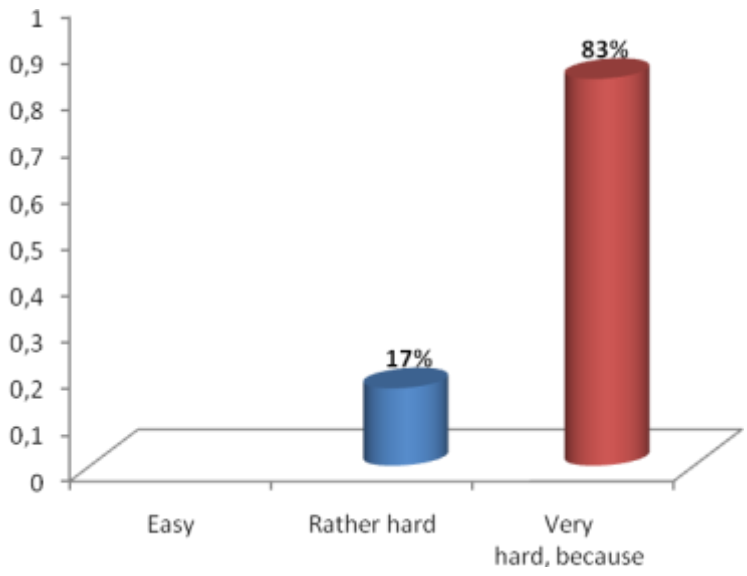

Figure 210-First steps in the app: Registration

In the case of registration procedure seniors commented again it is difficult by e-mail, 83% considered very difficult and 17% rather hard.

1.6.3-Signing in

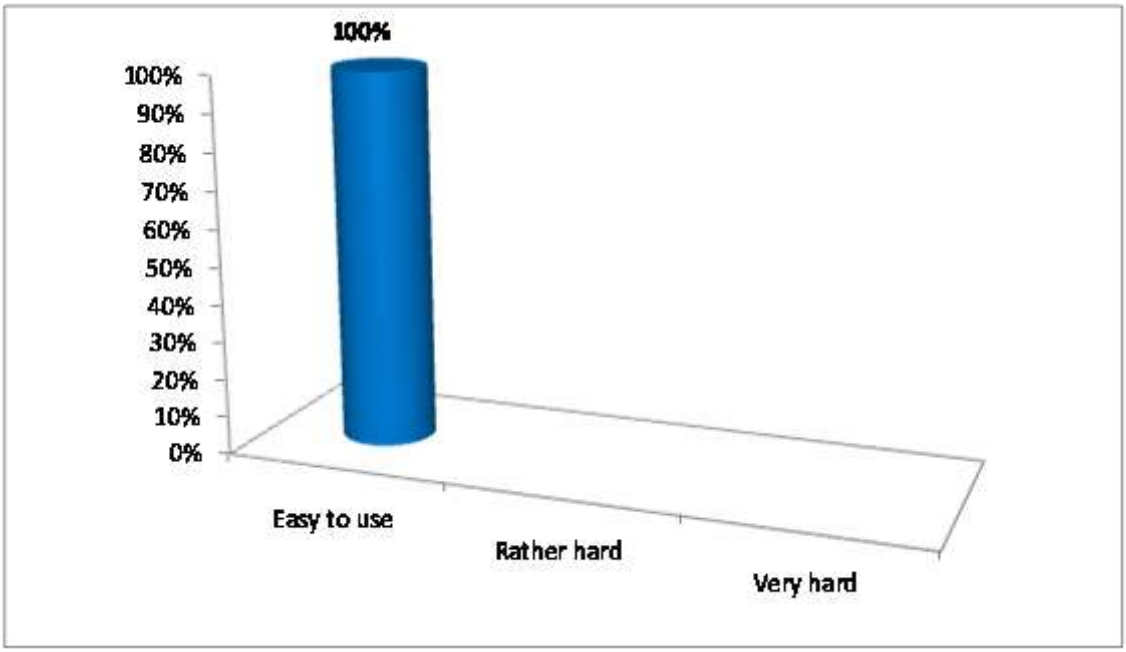

Figure 211-First steps in the app: Signing in

Concerning the process of signing in the application 100% commented it is easy to enter in Wayfis mobile application.

1.7-Enter a departure, destination

1.7.1-Usability

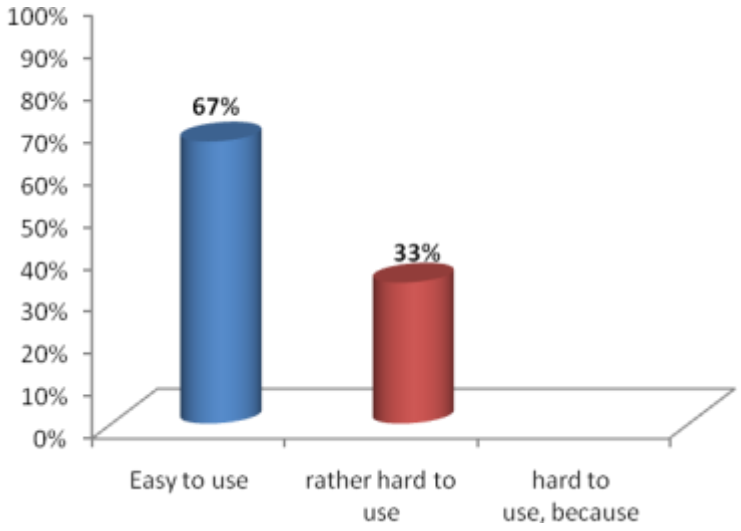

Figure 212-Enter a departure, destination: Usability

67% of seniors tested considered easy to introduce a departure or a destination in the application, their opinion changed considerably with respect to the prototype previously tested due especially to the increased font size, the autocomplete text command in text table departure/ destination, better understanding of “My sites” and “My routes”, to better use of GPS search button. 33% of seniors commented it is rather hard to use, due their eyesight problems and few skills with ICT.

1.7.2-Changing of them

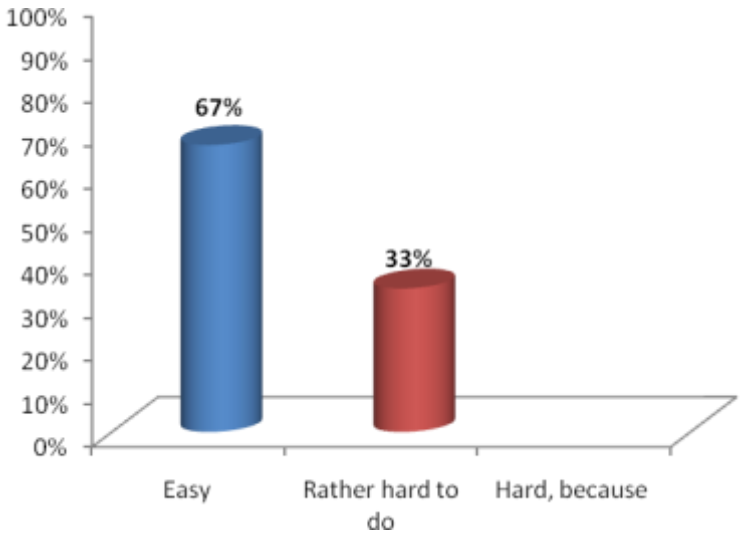

Figure 213-Enter a departure, destination: Changing of them

The majority of seniors tested (67%) considered easy to change the routes in mobile application and only 33 % considered rather hard to do it, maybe for the problems mentioned in point 1.7.1.

1.7.3-The way how they appear colors on the map is..

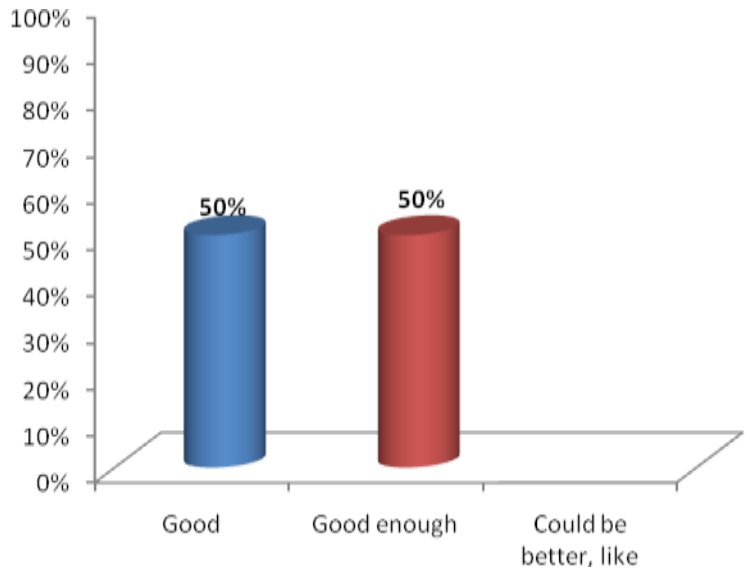

Figure 214-Enter a departure, destination: The way how they appear colors on the map is..

The majority of seniors agreed with way of how appear colors on the map. 50% said considered good and the other 50% good enough.

1.7.4-The way how they appears size on the map is..

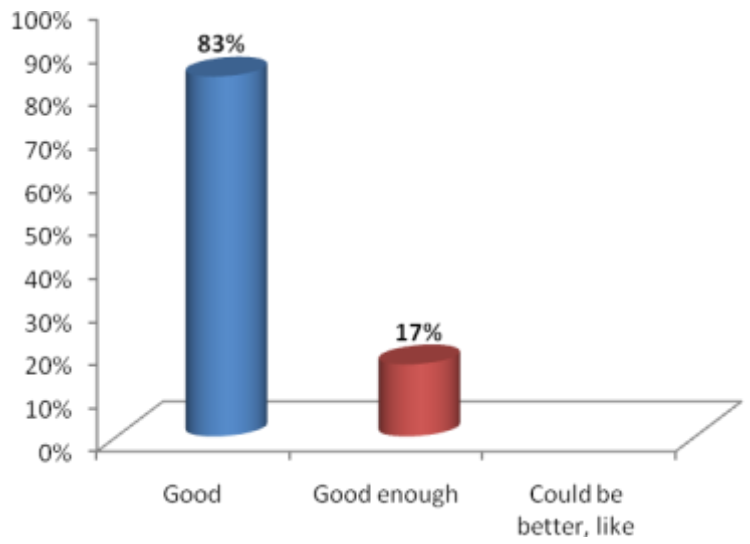

Figure 215-Enter a departure, destination: The way how they appear size on the map is…

Concerning the way how they appear size on map 83% of seniors commented it is good and only 17% considered good enough. Seniors again suggested it will be better if the zoom for the map will be available not only when the route is planned but also when the route being displayed along the navigation stage.

1.8-Route

1.8.1-The way how it appears colors in the map is…

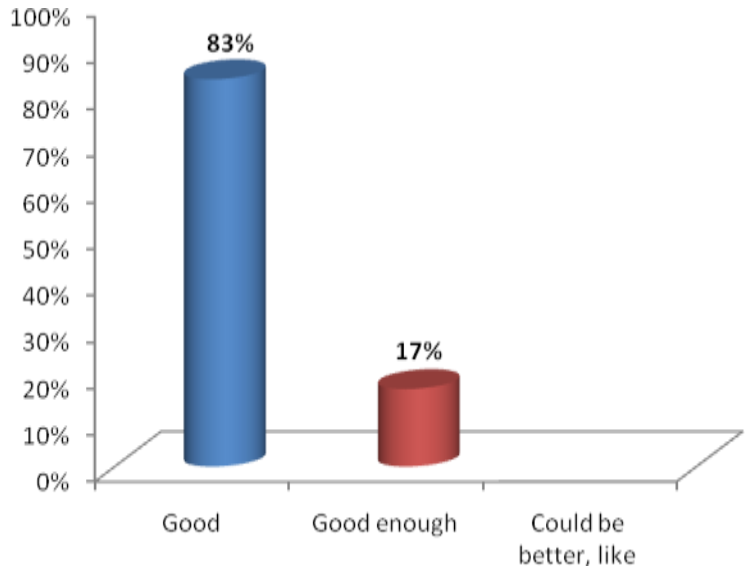

Figure 216-Route: The way how it appears colors in the map is..

Concerning the way how it appears colors in the map in the route 83% considered good and 17% good enough.

1.8.2-The way how it appears size in the map is…

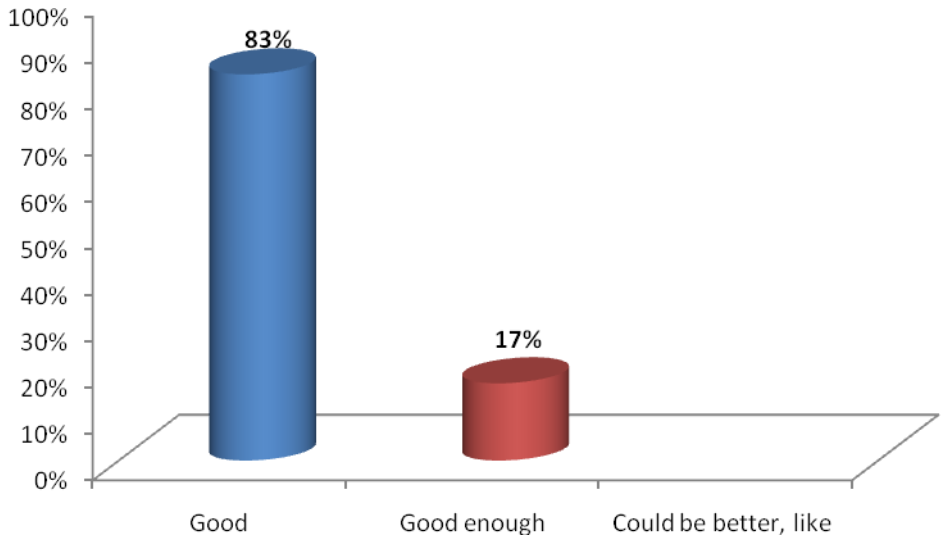

Figure 217-Route:The way how it appears size on the map is ..

When the route is in course 83% of seniors considered the way how it appears size on the map is good and 17% commented good enough. In this case the results were more positive than results obtained in previous validation.

1.8.3-If you want to change the route to do it is…..?

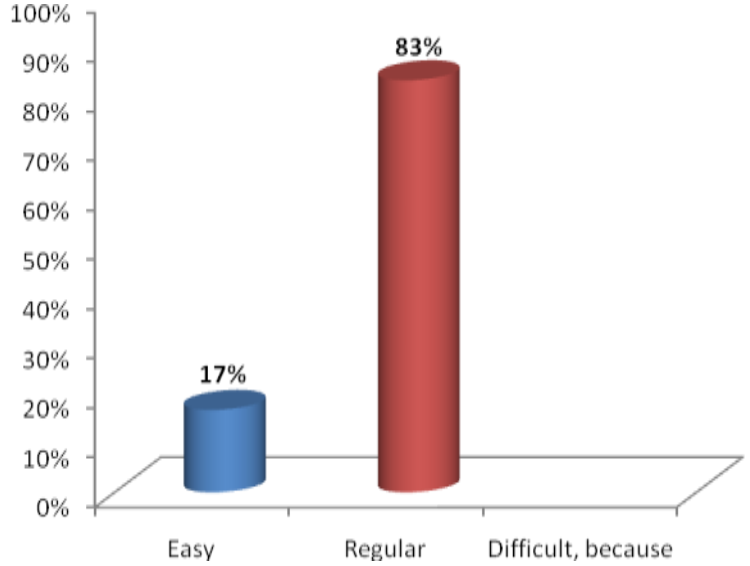

Figure 218-Route:If you want to change the route to do it is…?

In the case of change of the route 83% considered regular to change the route and 17% easy.

1.8.4-The color of arrows showed are…

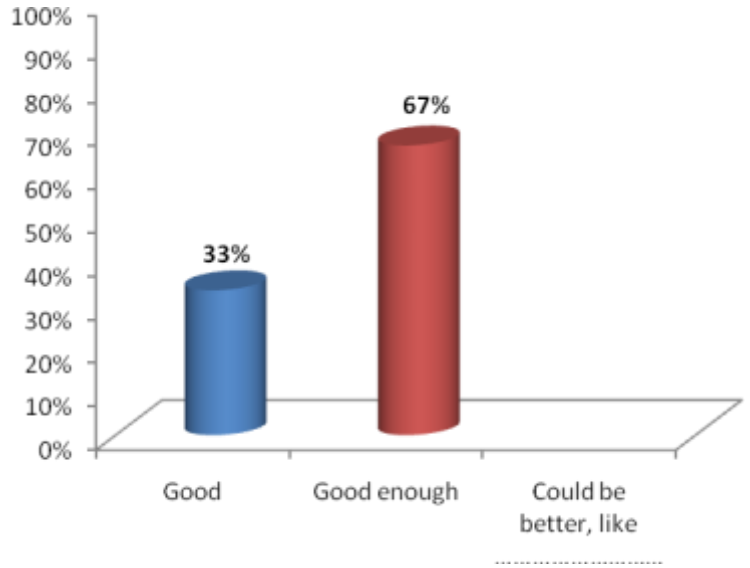

Figure 219-Route:The color of arrows showed are..

About the color of arrows showed in the mobile application 67% considered good enough and 33% good. Sometimes the text continued appearing in English.

1.8.5-The meanings of the arrows showed are…..

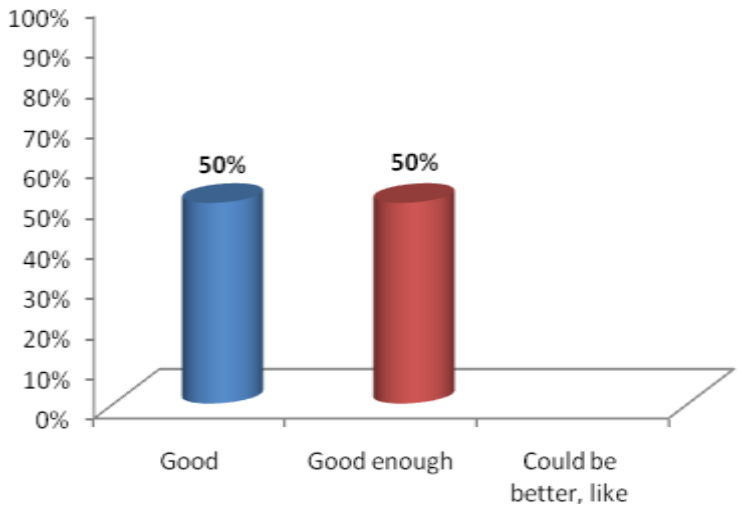

Figure 220-Route: The meanings of the arrows showed are…

In overall they understood the meaning of arrows 50% considered good and the other 50% good enough.

1.9-Screen

1.9.1-Images and letters

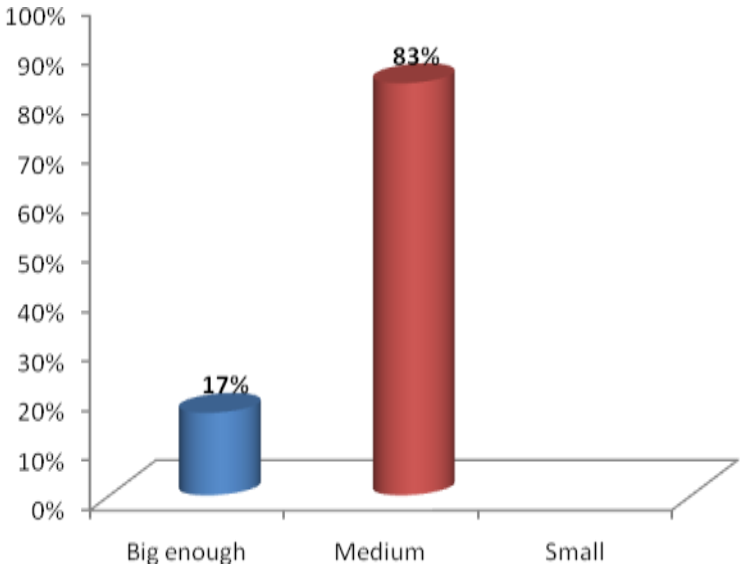

Figure 221-Screen: Images and letters

After the improvements done in mobile application,83% of seniors considered medium size and 17% big enough images and letters.

1.9.2-The font type is….

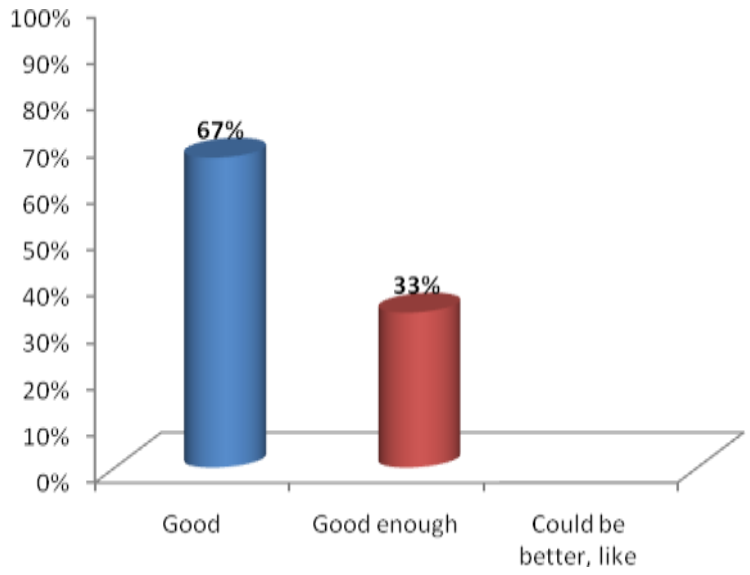

Figure 222-Screen: The font type is…

Relating font size 67% considered good and 33% good enough.

1.9.3-Brightness of the screen is…

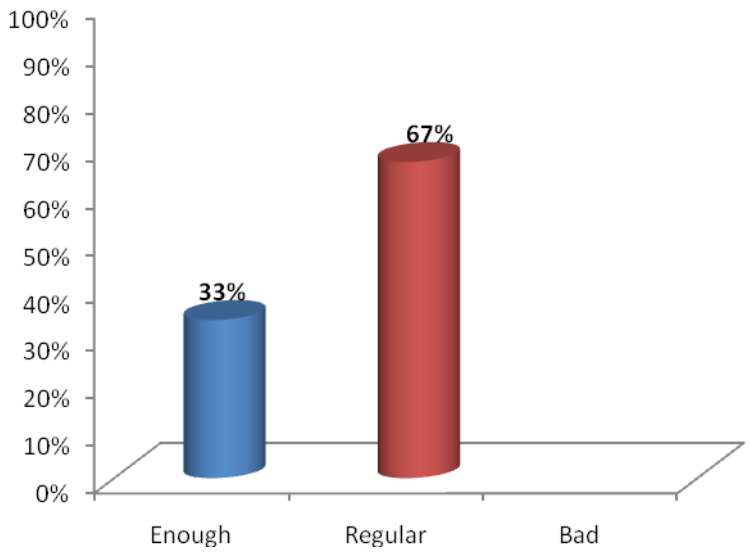

Figure 223-Screen: Brightness of the screen is….

Concerning brightness of the screen the results were also better than previous validation, 67% considered regular and 33% enough.

1.9.4-The information on the sites is….

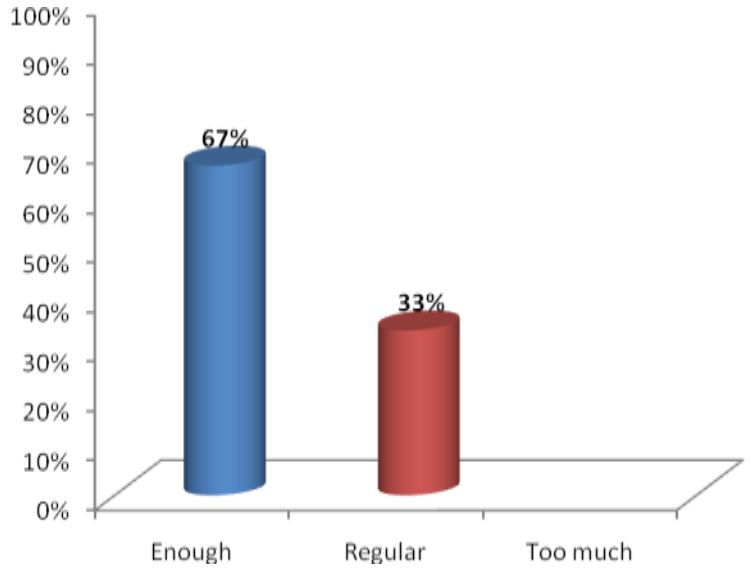

Figure 224-Screen: The information on the sites is…

Concerning the information on sites 67% considered it is enough and 33% regular.

1.10- POI's

1.10.1- Your profile settings and POI's showed to you…?

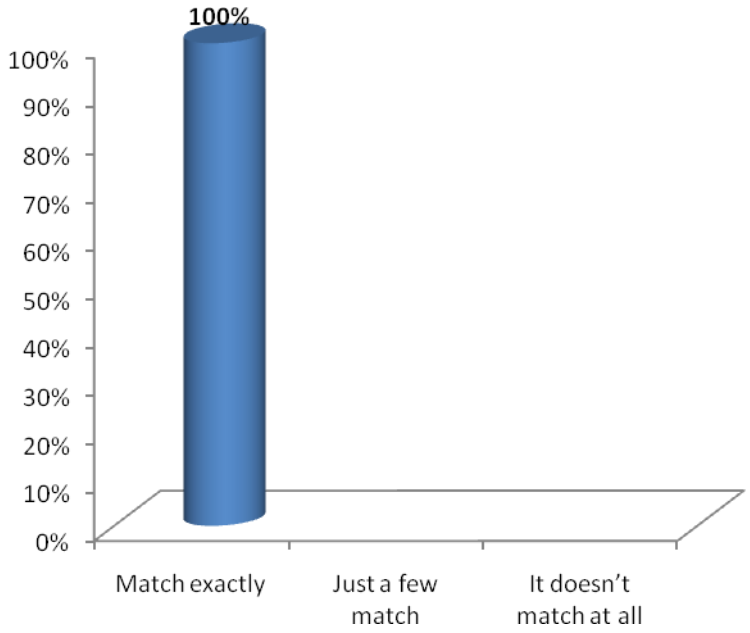

Figure 225-POI's: Your profile settings and POI's showed to you…?

In case of POI's showed 100% of seniors tested considered they match exactly with their profile settings.

1.10.2-POI's symbology is understandable…?

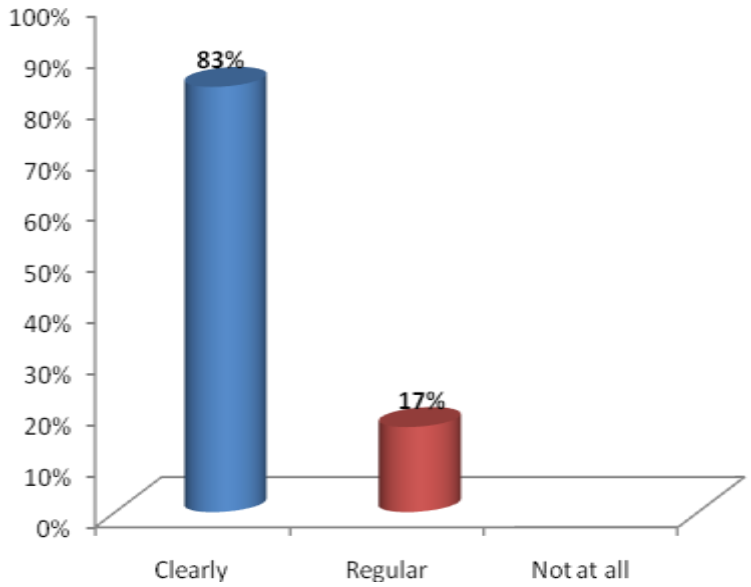

Figure 226-POI's:POI's symbology is understandable…?

83% of seniors tested considered POI's symbology is clearly understandable and 17% considered regular.

1.10.3-POI's showed along the route are….?

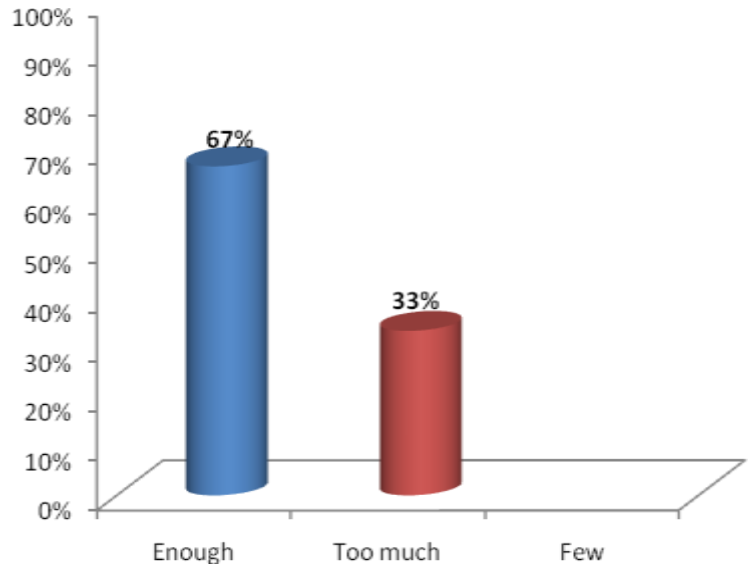

Figure 227-POI's: POI's showed along the route are…?

Concerning POI's showed along the route 67% considered them enough and only 33% considered too much.

1.11-Suggestions:

- They suggested again using a different procedure in registration; they considered difficult the actual procedure taking into account they don't have e-mail address. They suggested the registration by sms.

- Listen all the indications in Spanish in voice command sometimes they listened some words in English.

- To improve the quality of route orientation there were some mistakes in few cases.

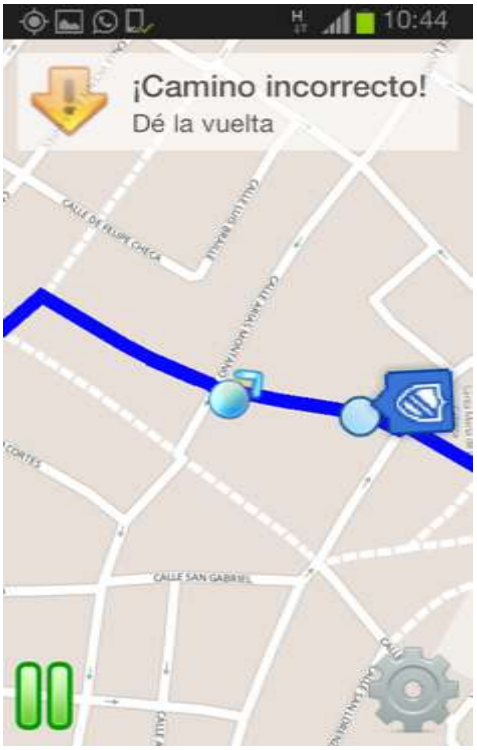

Image76-Example of problems with route orientation

- Seniors suggested again that it will be better if the zoom on the map will be available not only when the route is planned but also when starting the navigation mode.

Conclusions:

In overall seniors verified important improvements in mobile application in concrete:

- Bigger font size, images and icons.

- Bigger text tables to introduce destination and departure addresses.

- The majority of Badajoz streets were found by the app and the zones of Badajoz are located correctly.

- Seniors considered “My sites” and “My routes” functionalities very useful to plan a route, and very interesting the commands “Back” and “New route from here” as well autocomplete text function.

- Better results in change of routes now mobile app recalculate perfectly the new routes.

- The indications and arrows in above command functioned according the map indications.

- There were more POI’s available they match with seniors profile and POI’s icons are bigger now.

- When in the navigation mode, the accuracy of the calculated distance till next step or destination in the indication at the top of the screen improved considerably.

"This project has been funded under the third AAL call, AAL-2010-3. This publication [communication] reflects the views only of the author, and the Commission cannot be held responsible for any use which may be made of the information contained therein"

PROJECT Nº: AAL-2010-3- 014

Mobility Test Results (2nd Phase) Spain

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Classification	Internal
Version	V01
Total number of pages	30

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CETIEX	Maria João Machado, Irene Fritzen

3. Mobility Tests-Spain Results

Mobility tests were developed by CETIEX in collaboration with Puente Real (elderly home care) located in Badajoz. The tests took place from 6th to 8th August 2013.In this case participated the same users of 1st phase, 9 seniors with age between 70 and 94 years old. The 16 tests were developed along two days in different Badajoz zones. Initially CETIEX give a brief explanation about WayFiS mobile application and its functionalities and after those seniors began to introduce their profile, planned the route and done the route outside. In order to develop mobility tests it was used the WayFiS mobile application V10, and 4 smartphones with Android System: 2 Samsung Galaxy SIII Mini, 1 Samsung Galaxy SSCL and 1 Samsung Galaxy SL Plus.

Image 77-Wayfis Mobility Tests (Spain)

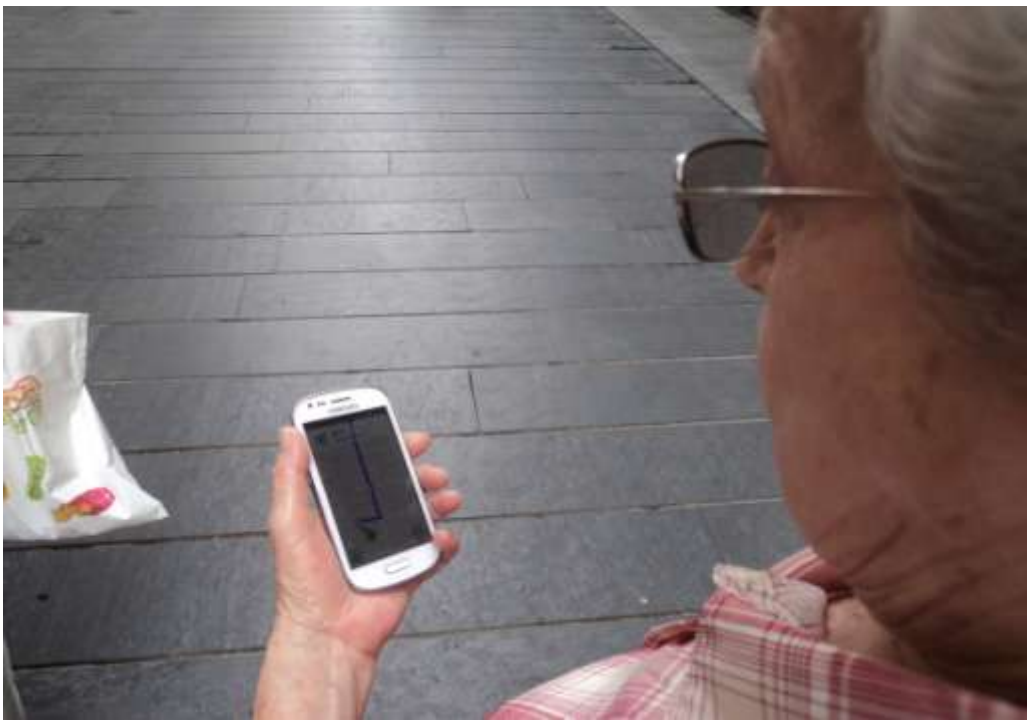

Image 78-Wayfis Mobility Tests (Spain)

Image 79-Wayfis Mobility Tests (Spain)

Image80- Wayfis Mobility Tests (Spain)

Image81- WayFiS Mobility Tests (Spain)

Image82- Wayfis Mobility Tests (Spain)

Image83- WayFiS Mobility Tests (Spain)

TRAVEL QUESTIONNAIRE	
Date	
Name	
Age	
Gender	☐ Male38% ☐ Female 62%
Level of education	☐ No education/primary school 50% ☐ Secondary school ☐ College (diploma) 38% ☐ University 12%
Currentemployment status	☐ Free lancer ☐ Employee ☐ Civil servant ☐ Labourer ☐ Housewife/-man ☐ Retired 100% ☐ other_____
Travel date	
Travel start time	
Origin	
Destination	
Reason for travel	
Transport used	☐ Walking 100% ☐ Bus ☐ Train ☐ Underground ☐ Tram ☐ Others….
Travelwith:	☐ Alone ☐ Other Relatives ☐ Spouse or partner ☐ Some friends 100% ☐ Formal/Informal caregiver ☐ Others
Turnontheapplication	Time to switch on ☐ 1-10 seconds 94% ☐ 10- 20 seconds 6% ☐ 20 – 30 seconds ☐ More than 30 seconds

Finding a departure, intermediate, destination point in the system	Finding the actual position with the button	
	☐ Exactly	81%
	☐ In the 5-10 meters	19%
	☐ More than 10 meters	
	Finding the departure point by writing	
	☐ Exactly	81%
	☐ In the 5-10 meters	19%
	☐ More than 10 meters	
	Finding the departure point	
	☐ Exactly	88%
	☐ In the 5-10 meters	12%
	☐ More than 10 meters	
	Finding the intermediate point	
	☐ Exactly	75%
	☐ In the 5-10 meters	25%
	☐ More than 10 meters	
	No applicable	
	Finding the destination point	
	☐ Exactly	88%
	☐ In the 5-10 meters	12%
	☐ More than 10 meters	
	Accuracy regarding the departure, destination	
	☐ Exactly	75%
	☐ In the 5-10 meters	25%
	☐ More than 10 meters	
	Speed in founding the points	
	☐ 1secons-10 seconds	88%

	10- 20 seconds 12% 20 – 30 seconds More than 30 seconds
The planned route	The route planned by the app is understandable: Totally 88% Mostly 12% It could be better, like …..
	The offered transports were correct Totally Mostly Not at all
	The time showed for the linked transport were correct Totally Mostly Not at all
	The appeared commands during the route are…. Helpful, understandable… 75% Regular 25% Bad
	Changing between routes is Clearly 75% Regular 25% Bad New route not found
	Images and letters during the route are… Big enough 44%

	☐ Medium 56% ☐ Small
	Speed changing between routes is ☐ 1secons-10 seconds 62% ☐ 10- 20 seconds 38% ☐ 20 – 30 seconds ☐ More than 30 seconds ☐ New route not found
Screen	Brightness of the screen is… ☐ Enough 75% ☐ Regular 25% ☐ Bad
POI's	POI's simbology is understable…? ☐ Clearly 94% ☐ Regular 6% ☐ Bad No POI'savailable
	During your trip your profile settings and the POI's showed to you…? ☐ Match exactly 75% ☐ Just a few match 25% It doesn't match at all
	POI's s Showed during your trip are…? ☐ Enough 94% ☐ Toomuch ☐ Few 6%

Routes	If you want to change the route to do it is….? ☐ Easy 75% ☐ Regular 25% ☐ Difficult
	If you choose the wrong path, the time it takes to tell you is...? ☐ 1secons-10seconds 56% ☐ 10- 20 seconds 44% ☐ 20 – 30 seconds ☐ More than 30 seconds New route not found
Accessibility	In case you make use of a specific route because a mobility aid ..? ☐ Is optimal 25% ☐ Regular 75% ☐ It doesn't show any different
Suggestions	Please feel free to share your opinion about the route planner

Table 17-Wayfis Mobility Tests Results 2nd Phase

1.1-Gender

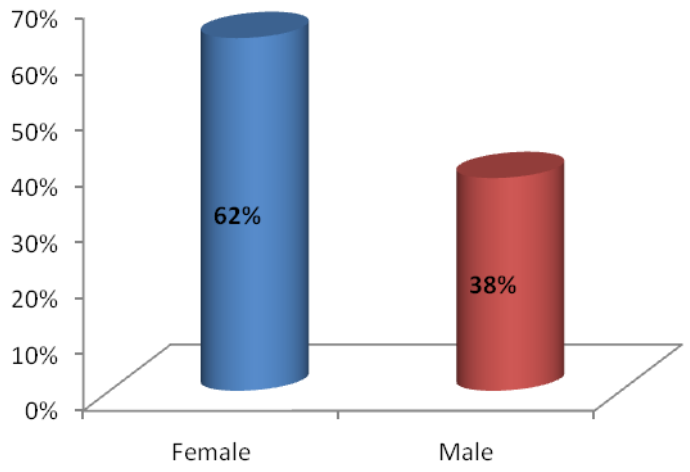

Figure 228-Gender

Concerning the gender of seniors tested 62% were women and 38% men.

1.2-Level of Education

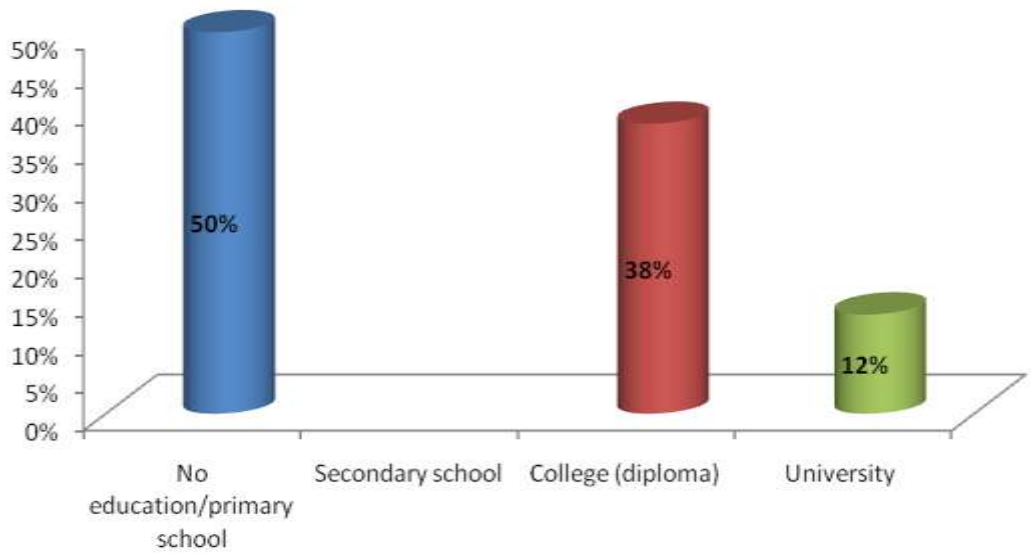

Figure 229-Level of education

Relating level of education seniors are divided in different levels of education in concrete: 50% were seniors with no education/ primary school, 38% were seniors with college and 12% with university studies.

1.3-Current employment status

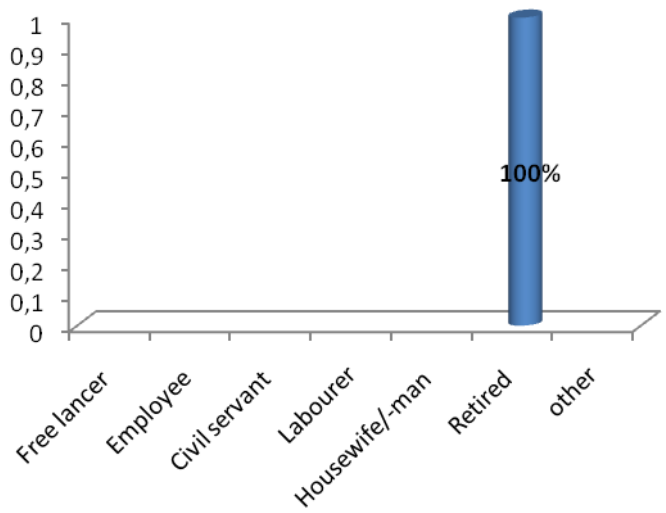

Figure 230-Current employment status

In the second phase of mobility tests developed in Badajoz 100% of seniors tested were retired.

1.4-Transport used

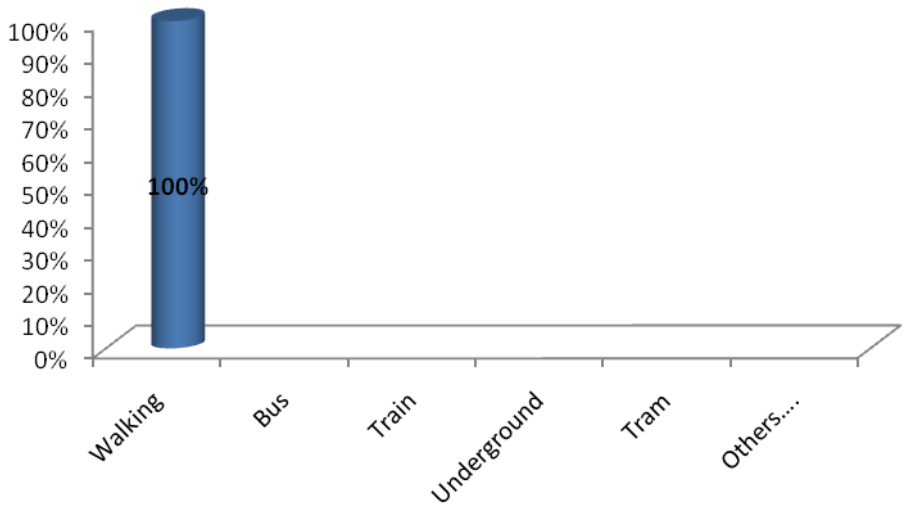

Figure 231–Transport used

In these mobility tests as happened in previous validation 100% of seniors were walking taking into account public transport weren't available for Badajoz.

1.5-Travel used with..

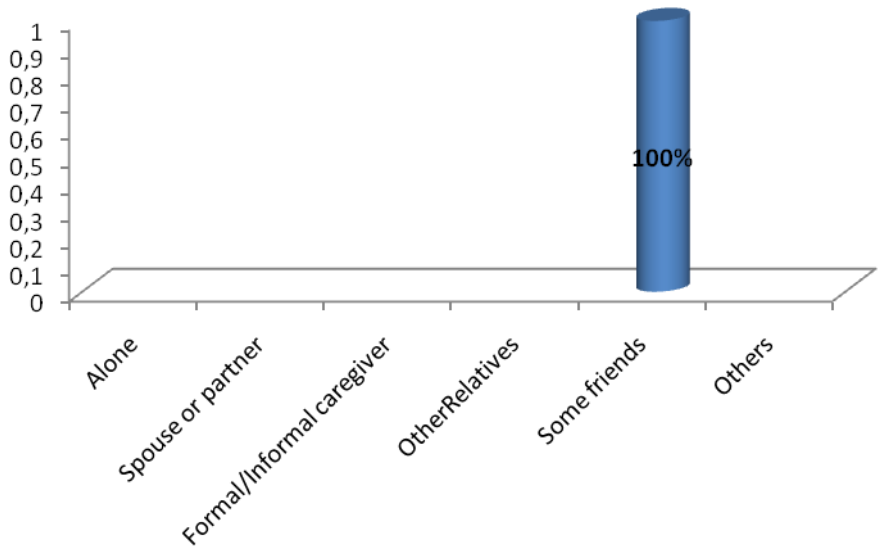

Figure 232-Travel with:..

In this validation the majority of seniors tested done mobility tests with some friends.

1.6-Turn on the application: Time to switch on

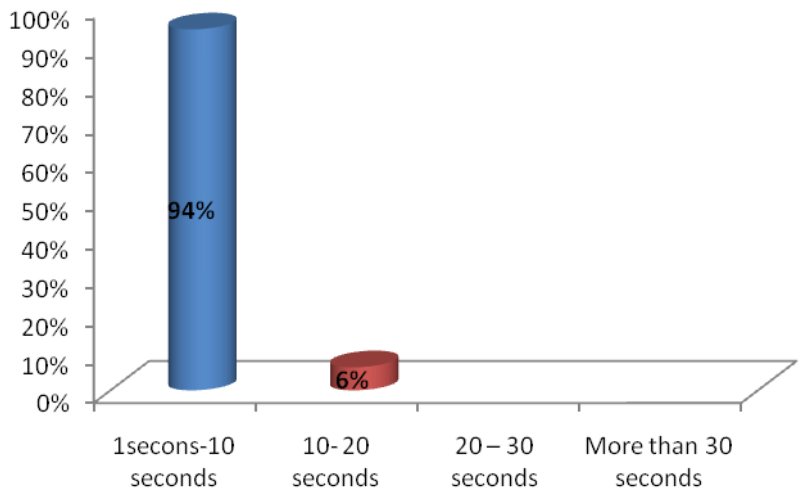

Figure 233-Turn on the application: Time to switch on..

Concerning the time to switch on the application users considered the procedure quick, 94% answered 1-10 seconds and 6% answered 10-20 seconds.

1.7-Find a departure, intermediate, destination point in the system

1.7.1-Finding the actual position with the button

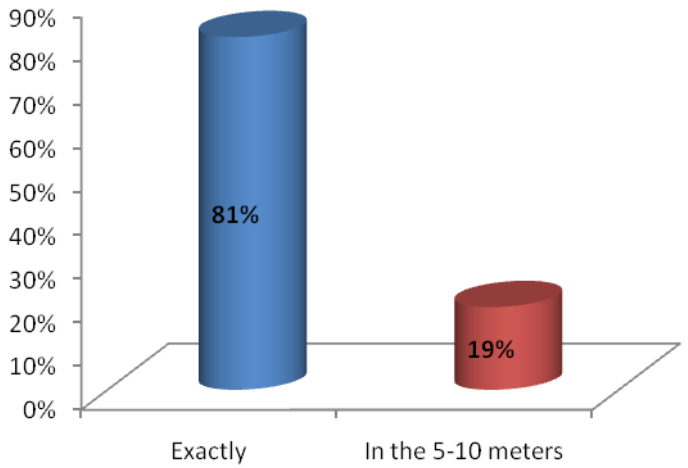

Figure 234-Find a departure, intermediate, destination point in the system: Finding the actual position with the button

Relating senior's answers of first validation and the answers of second validation about find actual position with the button improved considerably, 81% answered exactly and only 19% answer between 5-10 meters.

1.7.2-Finding the departure point by writing

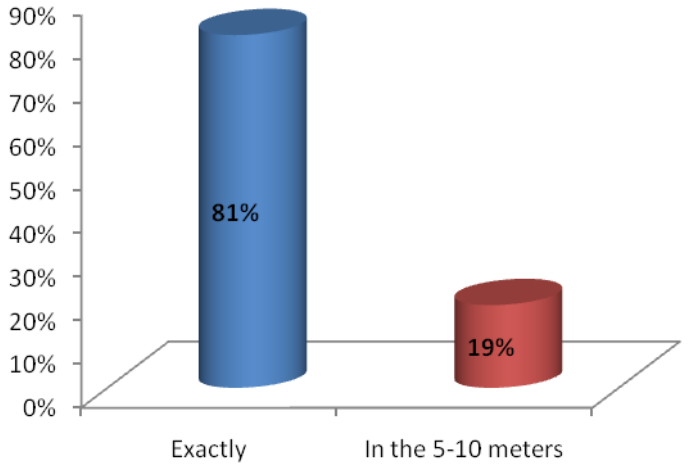

Figure 235-Find a departure, intermediate, destination point in the system: Finding the departure point by writing

About this issue seniors continued with problems with touch screen in order to write the departure address, but as the font size and text table departure were increased they felt more comfortable and as result their answers were more positive in comparison

with first mobility validation. 81% of seniors tested answered exactly and 19% commented between 5-10 meters.

1.7.3-Finding the departure point

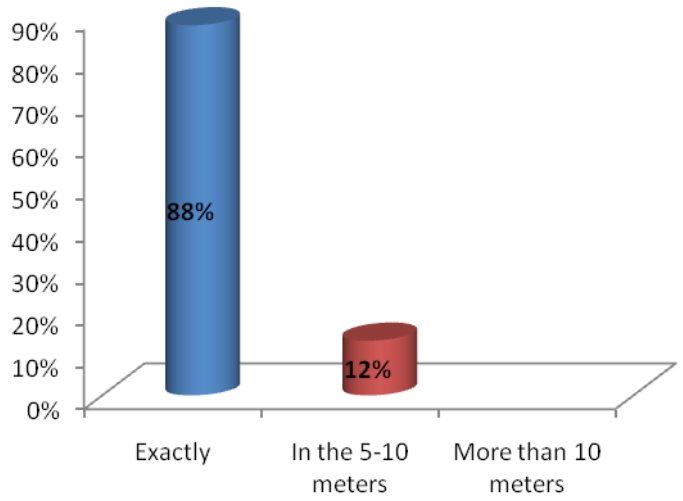

Figure 236-Find a departure, intermediate, destination point in the system: Finding the departure point

In this case to find the departure point in map 88% of users tested commented exactly and 12% commented in 5-10 meters.

1.7.4-Finding the intermediate point

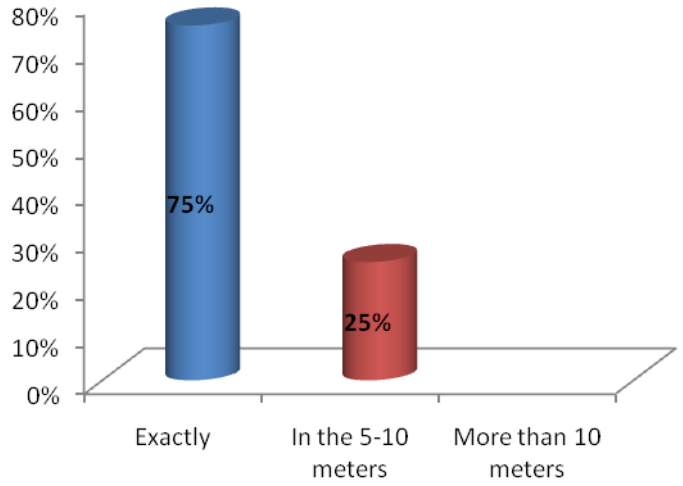

Figure 237-Find a departure, intermediate, destination point in the system: Finding the intermediate point

Relating the question to find an intermediate point 75% of seniors answered the mobile application finds it exactly and 25% answered in 5-10 meters.

1.7.5-Finding the destination point

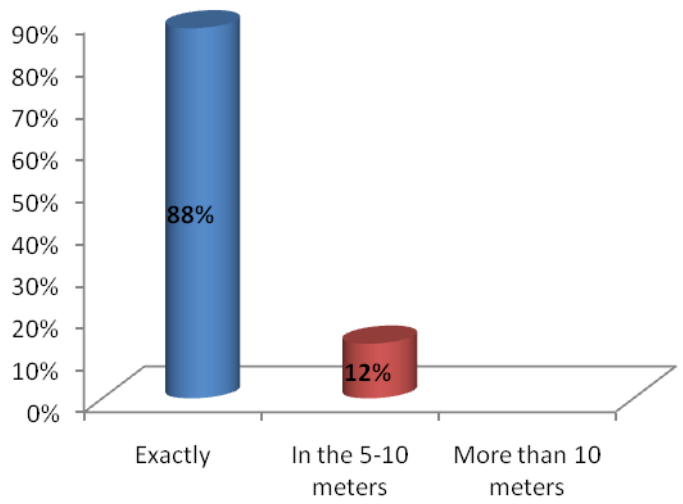

Figure 238-Find a departure, intermediate, destination point in the system: Finding the destination point

In this case 88% of seniors tested considered Wayfis mobile application finds a destination point exactly and only 12% considered between 5-10 meters, when they wrote the address or clicked the destination point in the map.

1.7.6-Accurancy regarding the departure, destination

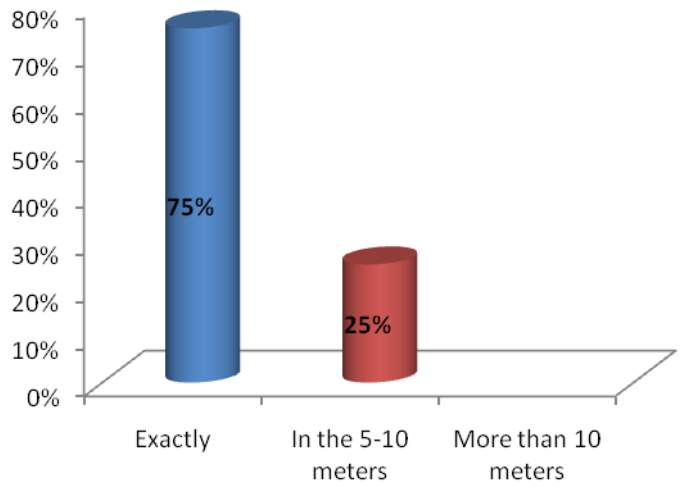

Figure 239-Find a departure, intermediate, destination point in the system: Accuracy regarding the departure, destination

Concerning accuracy regarding the departure and destination reflected in the map 75% answered exactly and 25% between 5-10 meters.

1.7.7-Speed in found the points

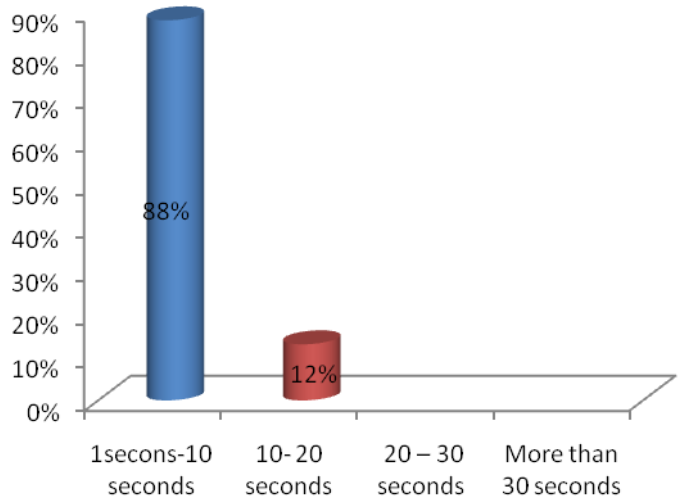

Figure 240-Find a departure, intermediate, destination point in the system: Speed in founding the points

About the speed in founding points senior's answers compared with previous validation improve significantly 88% answered between 1-10 seconds and only 12% answered 10-20 seconds.

1.8-The planned route

1.8.1-The route planned by the app is understandable..

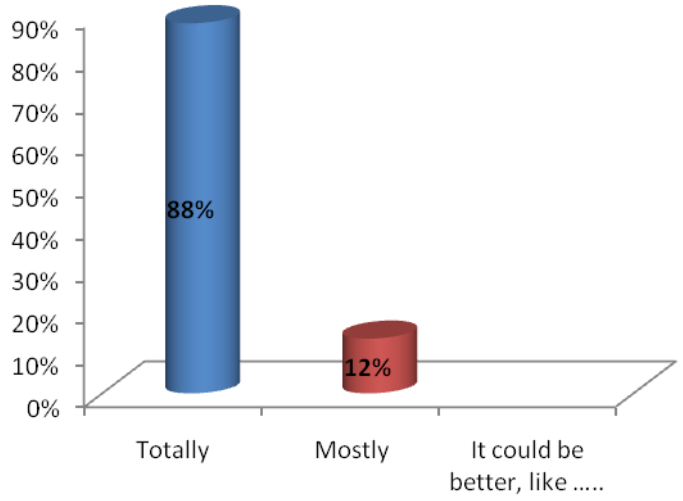

Figure 241- The planned route: The route planned by the app is understandable..

When mobile application planned a route in the map 88% of users tested answered it is totally understandable because it is possible to open the zoom in this step and see the name of the streets and exact situation of departure, intermediate and destination points, only 12% considered mostly understandable.

1.8.2-The offered transport were correct..

This question wasn't answered because Badajoz public transport weren't available in the app.

1.8.3-The time showed for the linked transport were correct..

This question wasn't answered because Badajoz public transport weren't available in the app.

1.8.4-The appeared commands during the route are…

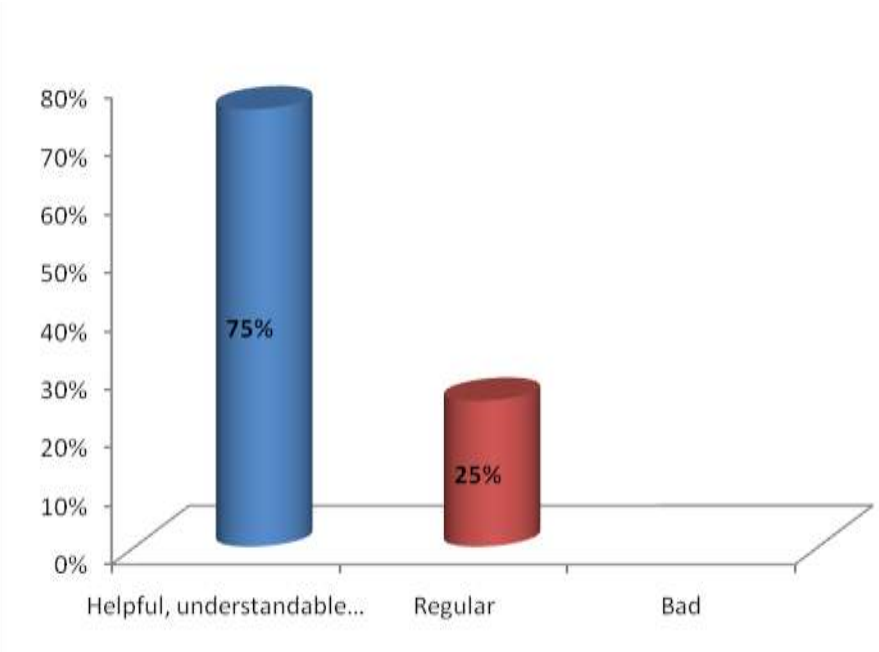

Figure 242-The planned route: The appeared commands during the route are…

Related to the commands that appeared in the route 75% considered helpful and understandable and 25% regular. Seniors commented that the size of some commands as setting command, when in navigation mode, can be increased (see example in suggestions).

1.8.5-Changing between route is..

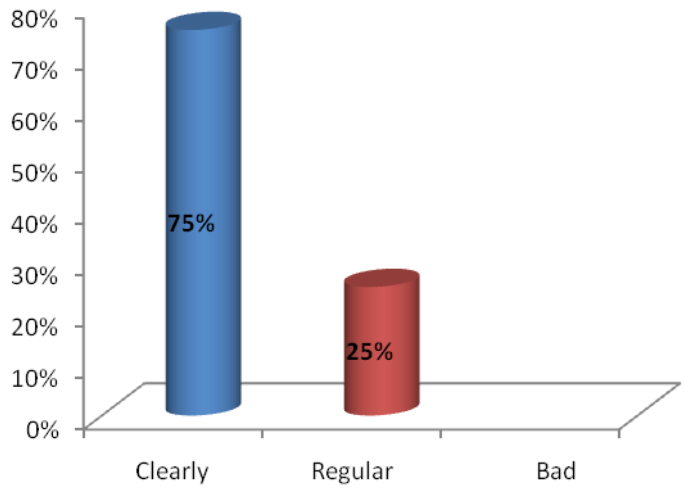

Figure 243-The planned route: Changing between route is…

Due to the improvements done in Wayfis mobile application in the second prototype, senior's answers relating this question were more positive than previous validation answers. 75% of seniors tested answered clearly and 25% answered regular.

1.8.6-Images and letters during the route are…

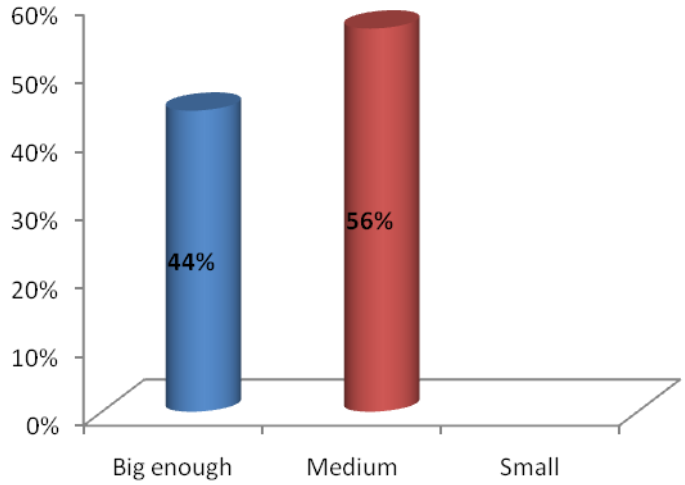

Figure 244-The planned route: Images and letters during the route are..

About images and letters during the route senior's answers also improved considerably, 56% considered medium size and 44% big enough size.

1.8.7-Speed changing between route is..

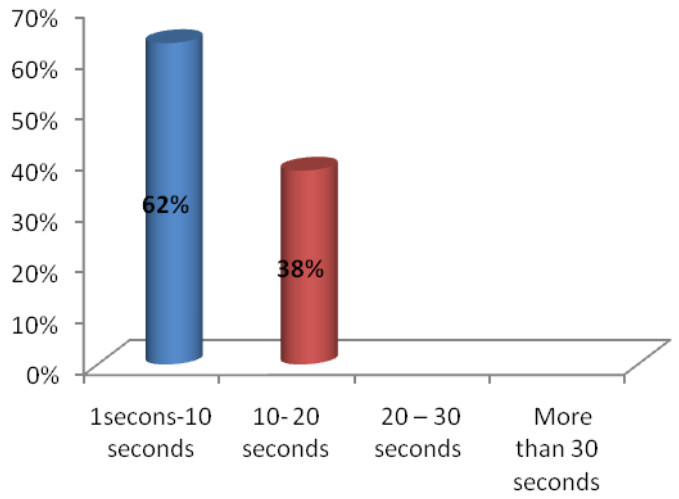

Figure 245-The planned route: Speed changing between route is..

Relating speed changing route 62% answered between 1-10 seconds and 38% between 10-20 seconds.

1.9-Screen

1.9.1-Brightness of screen is…

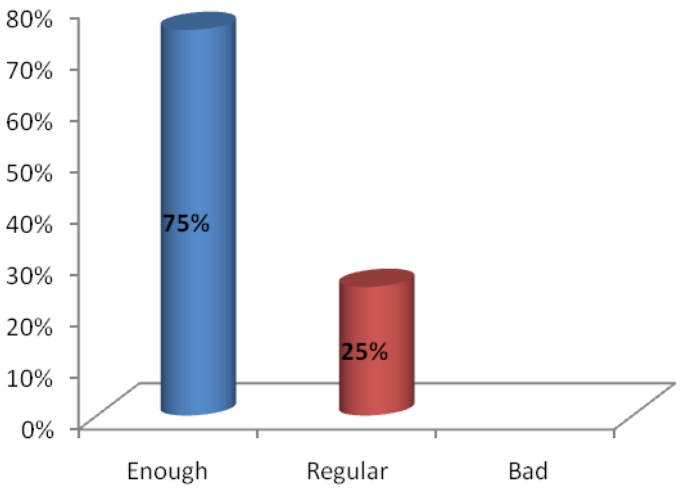

Figure 246- Screen: Brightness of screen is..

Concerning the brightness of screen 75% answered enough and 25% considered the brightness regular.

1.10-POI's

1.10.1-POI's symbology is understandable

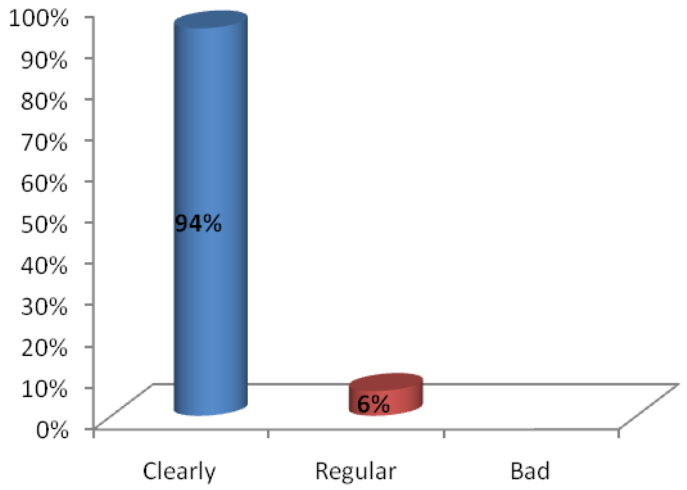

Figure 247- POI's: POI's symbology is understandable

Taking into account the improvements and the increasing of POI's availability in mobile application 94% of seniors tested considered POI's icons clearly understandable, and only 6% considered it regular.

1.10.2-During your trip your profile settings and the POI's showed to you…?

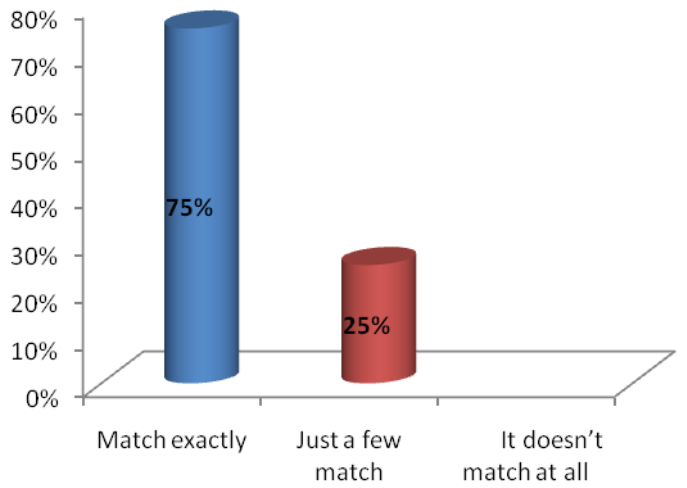

Figure 248- POI's: During your trip your profile setting and the POI's showed to you…?

75% of users tested commented POI's showed match exactly with their profile and 25% commented just a few match.

1.10.3-POI's showed during your trip are..?

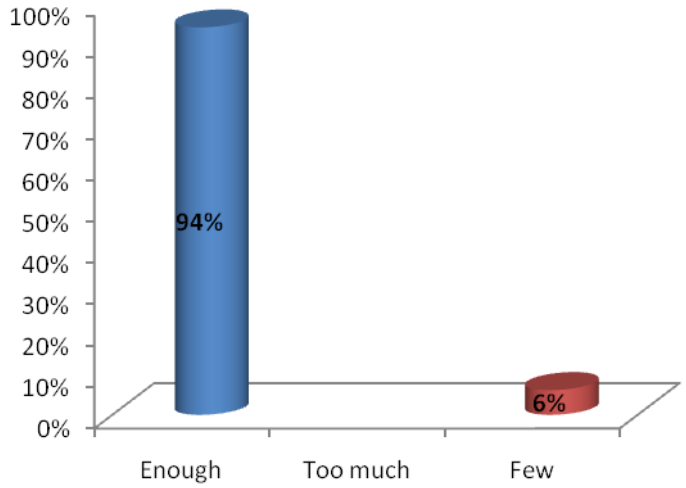

Figure 249-POI's: POI's showed your trip are..

Concerning the amount of POI's showed during the trip 94% commented they are enough and only 6% commented were few POI's available.

1.11-Routes

1.11.1-If you want to change the route to do it is…?

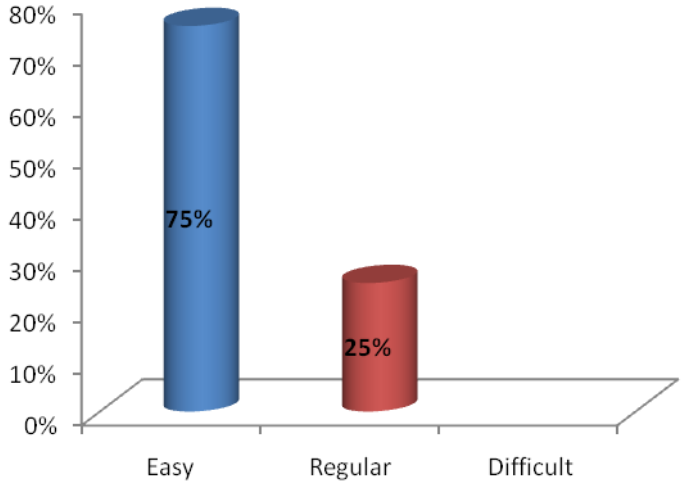

Figure 250-Routes-If you want to change the route to do it is….?

In the second mobility validation 75% considered to change the route easy and 25% considered regular to do it.

1.11.2-If you choose the wrong path, the time it takes to tell you is….?

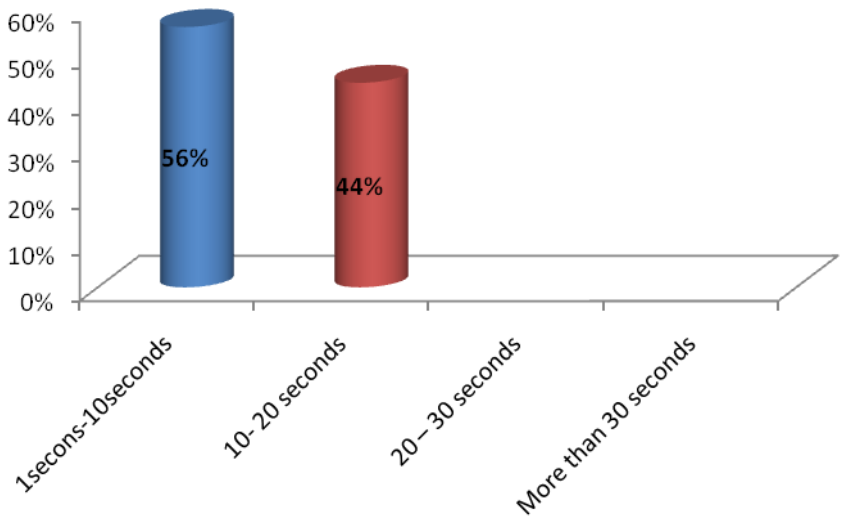

Figure 251- Routes: If you choose the wrong path, the time it takes to tell you is….?

Concerning the time to indicate a new route 56% of seniors answered between 1-10 seconds and 44% between 10-20 seconds.

.

1.12-Accessibility

1.12.1-In case you make use of a specific route because mobility aid…

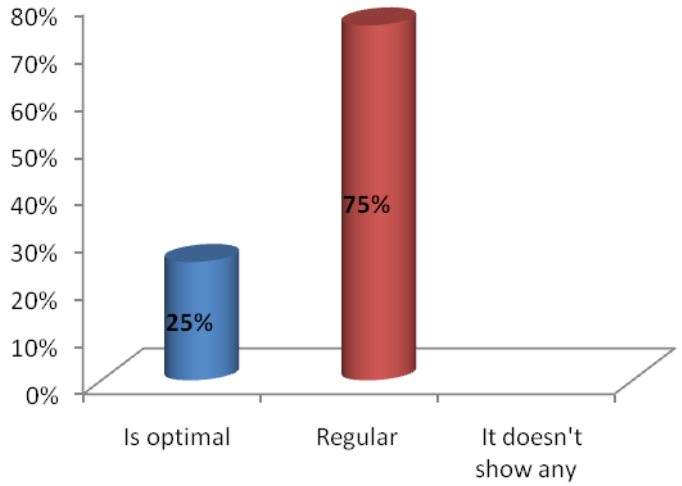

Figure 252-Accessibility.

About question related with a specific route due mobility aid 25% considered it optimal and 75% considered it regular.

1.13-Suggestions

- They suggested again using a different procedure in registration; they considered difficult the actual procedure taking into account they don't have e-mail address. They suggested the registration by sms.

- Listen all the indications in Spanish in voice command sometimes they listened some words in English.

- To increase the size of contents in settings command in the route planned.

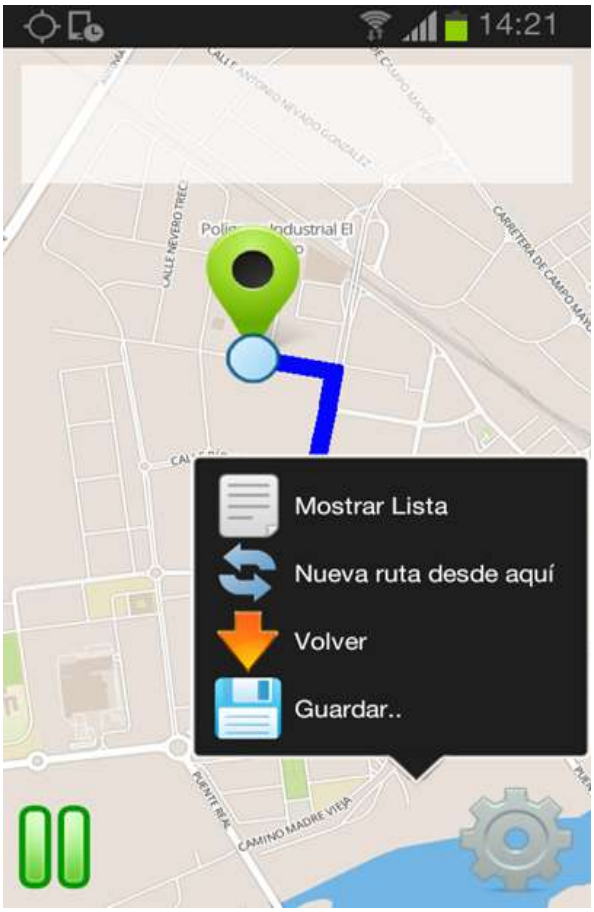

Image84- Example of font size could be increased

- Seniors suggested to translate to Spanish the text in above commands and text tables when the route beginning.

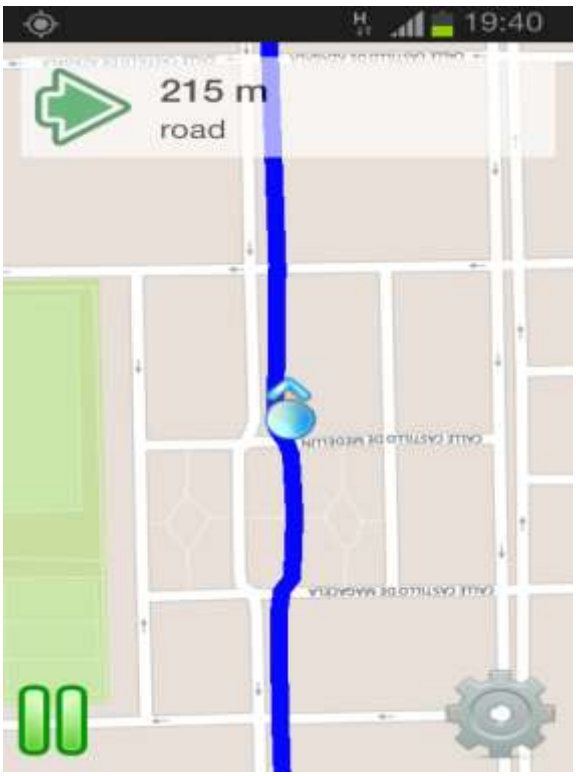

Image85- Example of indications with text in English

- To improve the quality of route orientation as there were some errorsin few cases.

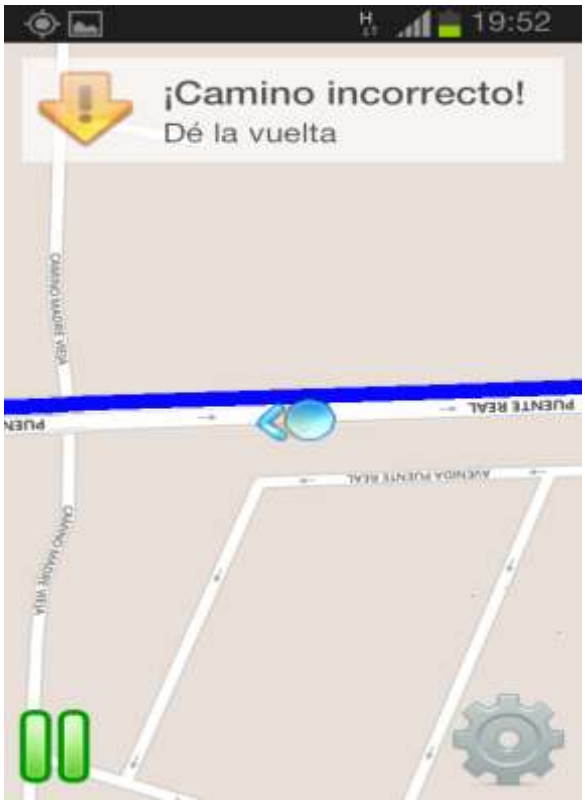

Image86- Example of problems with route orientation

- Seniors suggested again that it will be better if the zoom on the map will be available not only when the route is planned but also when the route is displayed in the navigation mode.

Conclusions:

In the second phase of mobility validation seniors tested commented WayFiS mobile application improved significantly in comparison with previous validation, now it is friendlier to use and adapted to their needs. Seniors feel more comfortable using it and verified important improvements in concrete:

- They were more comfortable with bigger font size, images and icons.
- Bigger text tables to introduce destination and departure addresses.
- They understand now better the mobile application structure and organization as well the concepts of buttons and areas.
- Users considered the images and icons descriptive and enough to manage mobile application and to plan a route.
- The voice command functioning improved considerably.
- The indications and arrows in above command functioned according the map indications.
- When the route is displayed in navigation mode, the accuracy on the distance to be covered number of meters till next step or destination shown at the top of the screen improved significantly.
- The majority of Badajoz streets were found by the app and the zones of Badajoz are located correctly.
- Better visibility relating with brightness of the screen.
- Better results in change of routes now mobile app recalculate perfectly the new routes.
- Seniors considered “My sites” and “My routes” functionalities very useful to plan a route, and very interesting the commands “Back” and “New route from here” as well autocomplete text function.
- There were more POI’s available they match with seniors profile and POI’s icons are bigger now.

Annex D – 2nd Phase Hungarian Results

Design Tests

Usability Tests

Mobility Tests

"This project has been funded under the third AAL call, AAL-2010-3. This publication [communication] reflects the views only of the author, and the Commission cannot be held responsible for any use which may be made of the information contained therein"

PROJECT Nº: AAL-2010-3- 014

Design Test Results (2nd Phase) Hungary

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Author(s)	SMIMO
Participant(s)	
Work package	WP5–Users acceptance test and validation
Classification	Internal
Version	V02
Total number of pages	11

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Design Tests

Hungarian Results

1. Pc Test

The design web tests (2nd phase) were done at the BZN (Bay Zoltán Nonprofit Ltd. for Applied Research) in Budapest. The reason why the tests were done with the elder colleagues of the BZN is that people at the SMIMO (old age house) usually do not have any computer or computer skills. The test were done on the 22nd of August in the seniors´ (1 woman and 2 men) office. The lady was 74 years-old and the men were 54 and 64. The test started with a small presentation about the WayFIS2ndtrototype of the web application and its functionalities. After that seniors entered in the application, filled their profile settings, reviewed the web functionalities and planned some routes. Finally they reflected opinions and suggestions in usability questionnaires.

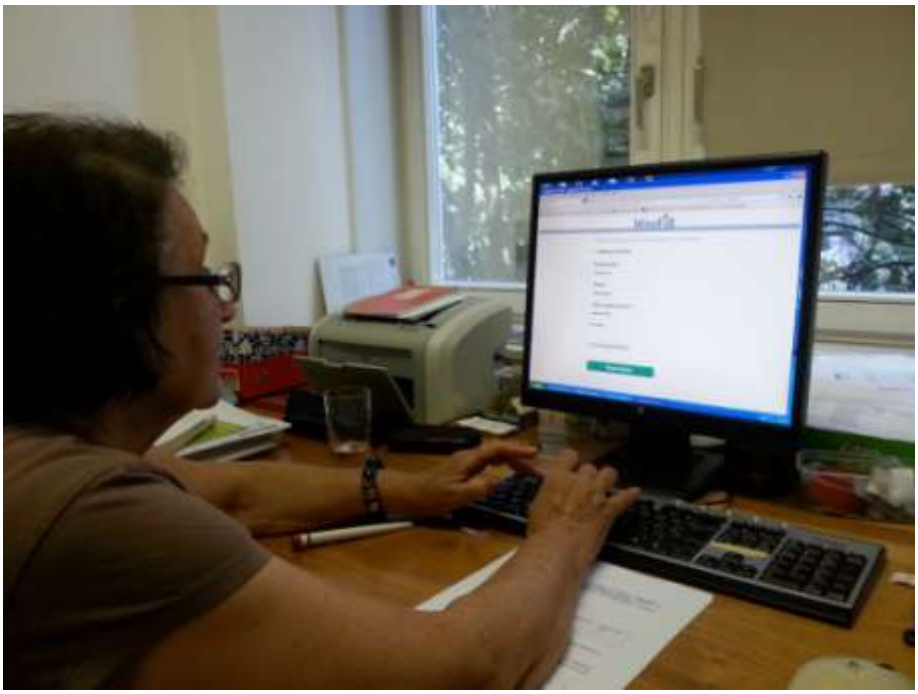

Image87- WayFIS PC test (Hungary)

Image88- WayFIS PC test (Hungary)

General	Clearly identify each point	100%
	All points are needed	100%
	The blocks are well defined	100%
	It displays all the necessary information	93%
	TOTAL	**98%**
Identity and information	Information is organized	93%
	You understand the information on the page	100%
	TOTAL	**97%**
Labeled	The images/icons are descriptive	100%
	The button tooltips are useful to understand their function	93%
	The position of the buttons is consistent with its function	100%
	Fails to distinguish clickable areas from others not	100%
	The purpose of the buttons is clear	93%
	The site is balanced, it is not overloaded	100%
	Pages titles are correct	100%
	TOTAL	**98%**
	There are navigation elements to guide the user about where and how to undo their navigation	93%
	The organizational structure and navigation is adequate	100%
	Links are easily recognizable	100%
	The structured navigation allows to entering properly	93%
	It is clear how the system shows the route	100%
	The purpose of the intermediate points is clear	100%
	It is easy to organize a trip	93%
	It is useful to have favorite routes	100%
	The relationship between the personal settings on the web and its implications for route planning is clear and useful	100%
	The management of saved items (routes, points) is accessible and easy to handle	100%

Structure and navigation	It is useful to be able to select recently used items when clicking on the address fields	100%
	View a route recently planned is simple	100%
	Navigate around the map is easy	100%
	The purpose of saving a point or route is clear	100%
	The auto complete feature is useful	100%
	It is easy to modify a trip	87%
	TOTAL	**98%**
Appearance	It is avoided overload information	0%
	There are areas in White between objects to rest for the eyes	100%
	Colors are suited to WayFiS image	100%
	There are clearly visual hierarchies established	100%
	Length page is enough	100%
	Width page is enough	100%
	TOTAL	**82%**
Accessibility	The font size is large enough to view it.	100%
	The font type, typographic effects, alignment, line width and employees make reading easily	100%
	There is a high contrast between the font color and background	100%
	Web site is compatible with different browsers	87%
	You can print the page without problems	100%
	The download time is right	100%
	TOTAL	**98%**

Table18-WayFIS Results PC Design Questionnaire 2nd phase

1.1 General

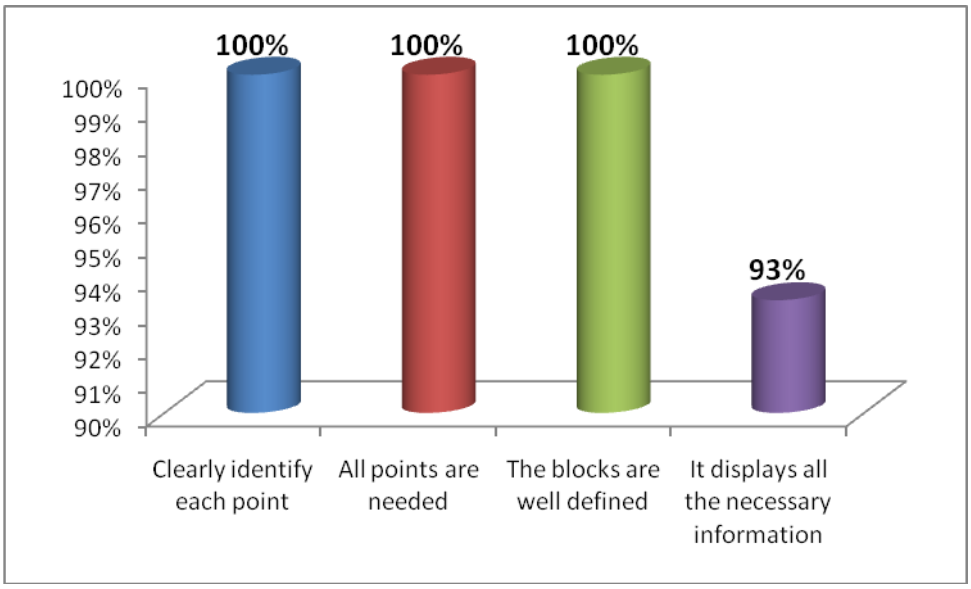

Figure 253-General PC

Concerning the general design of WayFiS web application and according seniors answers the web application improved considerably. They pointed with 100% “all points are needed”, “clearly identify each point” and that the blocks are well defined. 93% of the seniors considered “it displays all the necessary information”.

1.2 Identity and information

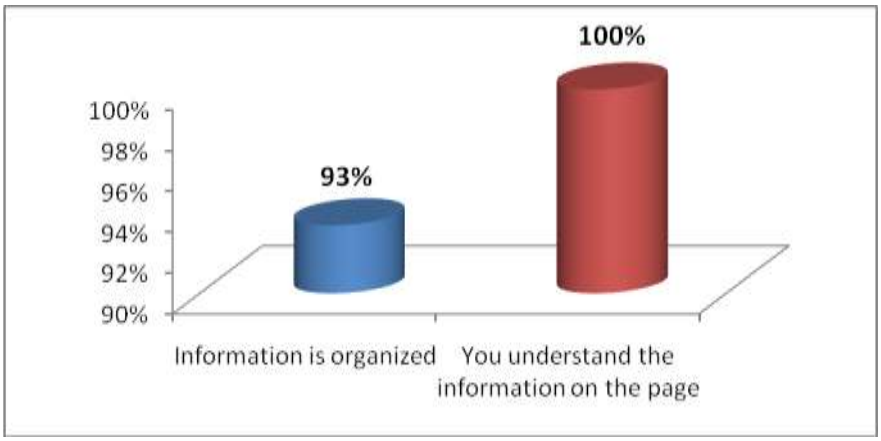

Figure 254-Identity and Information PC

About identity and information issue they considered the information is organized and understandable in the web application. 93% said that the information is organized and all of them considered that they understand the information on the page.

1.3 Labeled

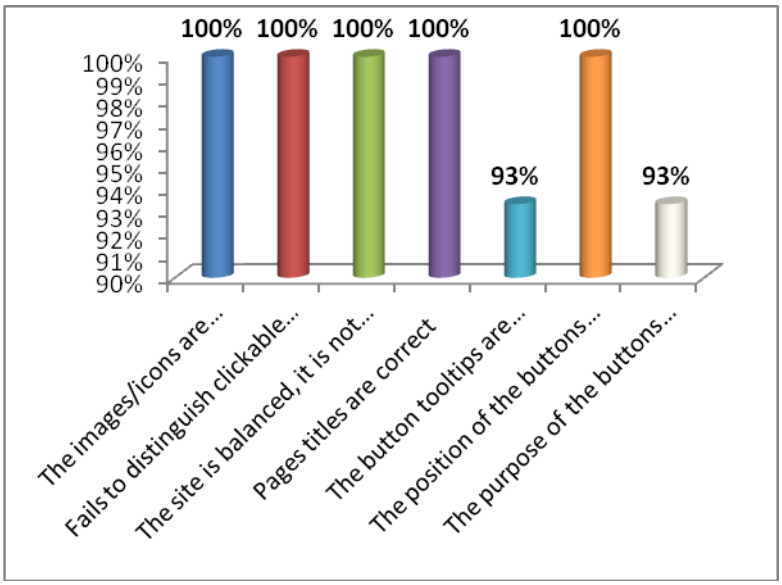

Figure 255-Labeled PC

About the labeled concerning users answers they understood perfectly the means of images, buttons and icons. They were only complaining about more help what could be good like using more tooltips of the buttons because for the first look they couldn't find out the purpose of all the buttons.

1.4 Structure and Navigation

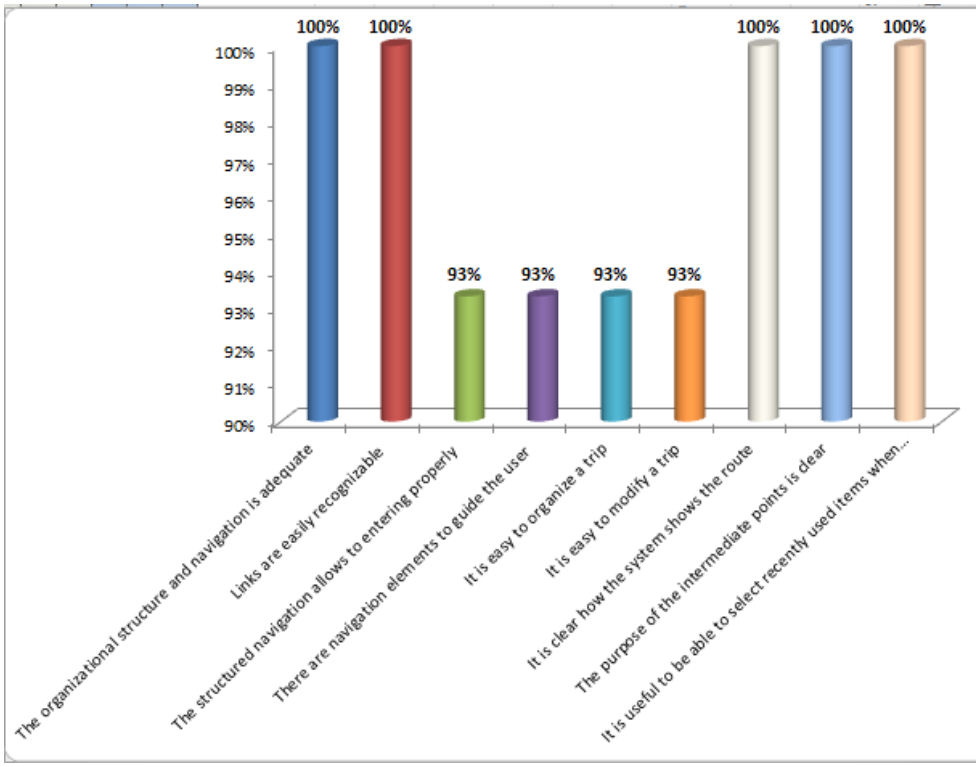

Figure 256-Structure and Navigation 1 PC

Generally seniors at the BZN could understand how the system shows the route, the purpose of the intermediate point. They also found the structure and the navigation adequate and they could recognize the links easily. They were only complaining a bit that there aren't enough elements to guide the user and why 93% said that organizing or modifying the trip is easy is because they couldn't use the My places so easily during the route planning.

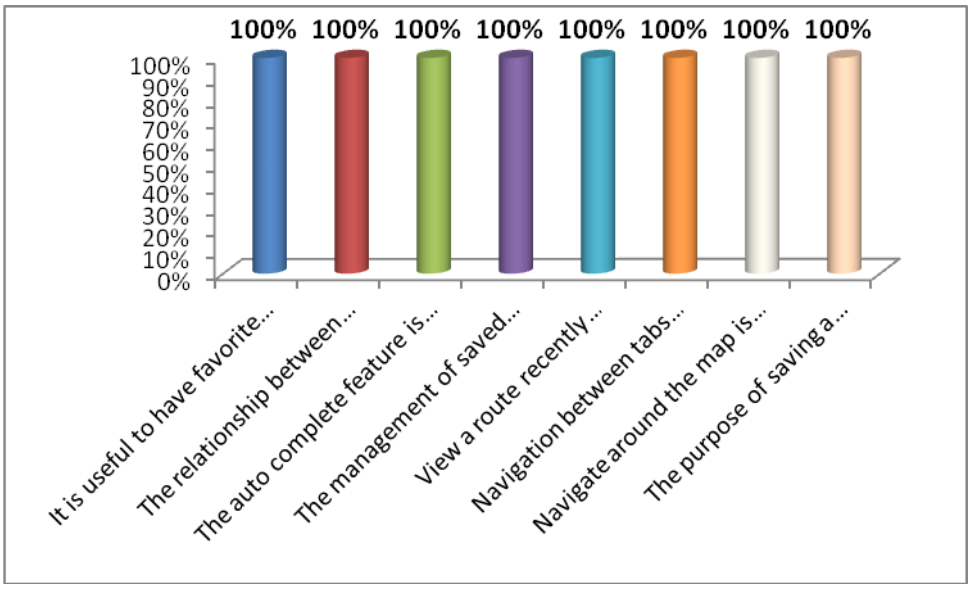

Figure 257- Structure and Navigation 2 PC

They were totally satisfied with the above mentioned statements about the structure and navigation. All of them got 100%. They liked the autocomplete function very much because they found it very useful!

1.5 Appearance

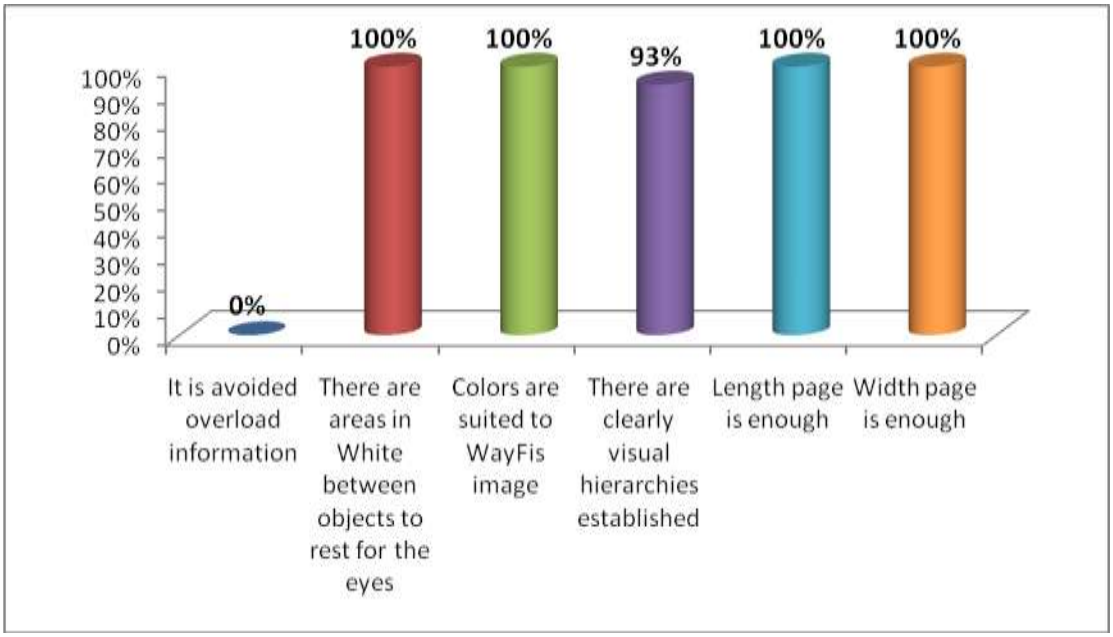

Figure 258- Appearance PC

Taking into account seniors answers the appearance and image of web application improved considerably with respect to the first prototype tested along the first phase according users' needs in terms of colors, font size. Some indications are included and buttons' name is changed because the name of the button was too long and they couldn't see it so well. They considered that there is enough information with areas to rest the eyes and the information is well-organized.

1.6 Accessibility

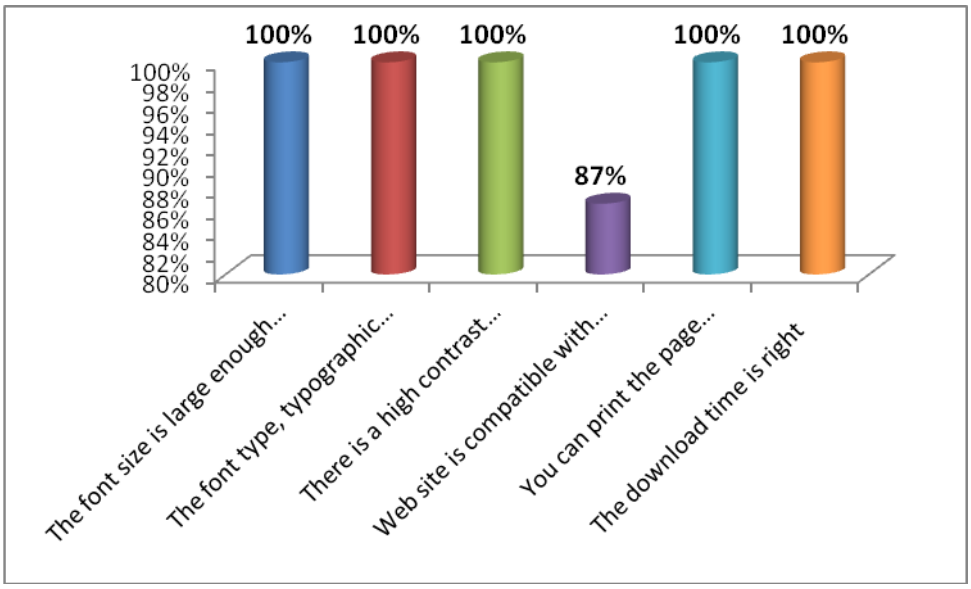

Figure 259- Accessibility PC

In terms of accessibility they considered the download time is fast (depending on their computer of course). The type and the size of the font was perfect, they could see it very well with or without glasses. They also gave a positive feedback concerning the contrast between the colors and the possibility to print out the route considered very useful for them. How they mentioned they usually print a map about the place where they would like to go. Concerning accessibility they only had problem with the compatibility because the website worked with Google Crome and with Internet Explorer. The 2nd prototype has sometimes problems to work in Firefox as in the latest version of the browser a new behavior has been introduced that automatically blocks Mixed Content windows which is the case of the page where the pre-planner visualized what the elderlies could not enable the display of the frame. The development team has already planned to change the design of the page in the period after project completion to solve this issue.

1.7 Suggestions

- On the main page:
  - the flags and the possibility to choose the language should be the right hand side to see it better. They also complained about that the flags are too close to each other.
  - The log in would be better under the registration, because the button hides the picture.

Image 89-suggestions for the main page

- there was one button with the red background which function was not understandable because the text of the button could not be seen. Seniors would

be happy if the text would be shortened like “Fiókomtörlése” to be able to see it

Image90-Example of not understandable button

- The way how the application shows the route is mostly understandable. They just had some comments like:
  - it would be good if the green picture under the map about the route would be more understandable
  - there are still some missing translations from route planner directions like road, path, derived from the route directions that come from the planner, pending to be solved after project completion.
  - the number of the used transports is not correct which unfortunately cannot be solved till the end of the project because it needs more time for the development as it might be derived from not accurate,/incomplete public transport data.

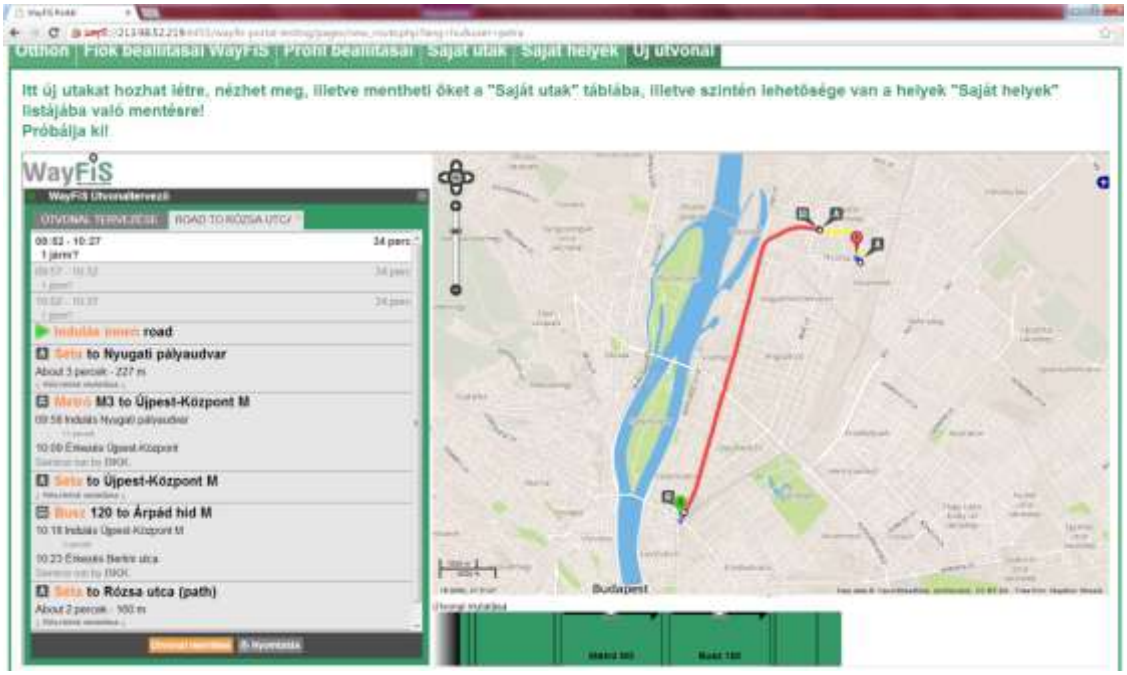

Image91- Example of suggestions with the showed route

Conclusions

Generally seniors from the BZN liked the route planner very much. They found the design very nice with the colors of the WayFiS. Their conclusions were:

- They considered the information is organized and understandable in the web application.
- Seniors understood perfectly the means of images, buttons and icons. They considered the sites well-structured and correct and understandable page titles.
- Seniors tested understood the meaning of buttons in WayFiSbut they were also complaining that more help would be useful and helpful for them.
- They found the Mysites and My places side very useful and interesting.
- They considered the auto complete feature very useful in order to include a new address in departure, destination or intermediary point.
- They also considered easy to view a route recently, to see the route, icons and images in the map.

2 Mobile Test

The design mobile tests (2nd phase) were developed in SMIMO (old-aged house) in Tökül on 21st August 2013 by four seniors, 4 women between 64 and 78 years old. Some of the ladies have already taken part in the previous testing phase but even so it was hard for them to use the smart phone because this WayFiS testing time was the first time when they used smartphones.

SMIMO did a presentation of WayFiS mobile application. Seniors reviewed mobile application functionalities and planned some routes.In order to analyzed mobile app it was used WayFiS application V11 and used 4 smart phones with Android System: Samsung SIII.

Image92- WayFiS Mobile test (Hungary)

General	Clearly identify each point	75%
	All points are needed	95%
	The blocks are well defined	75%
	It displays all the necessary information	100%
	TOTAL	**86%**
Identity and information	Information is organized	90%
	You understand the information on the page	70%
	TOTAL	**80%**
Labeled	The images/icons are descriptive	90%

	The button tooltips are useful to understand their function	70%
	The position of the buttons is consistent with its function	95%
	Fails to distinguish clickable areas from others not	90%
	The purpose of the buttons is clear	80%
	The site is balanced, it is not overloaded	90%
	Pages titles are correct	95%
	TOTAL	**87%**
Structure and navigation	There are navigation elements to guide the user about where and how to undo their navigation	80%
	The organizational structure and navigation is adequate	95%
	Links are easily recognizable	85%
	The structured navigation allows to entering properly	70%
	It is clear how the system shows the route	90%
	The purpose of the intermediate points is clear	100%
	It is easy to organize a trip	75%
	It is useful to have favorite routes	100%
	The relationship between the personal settings on the web and its implications for route planning is clear and useful	100%
	The management of saved items (routes, points) is accessible and easy to handle	70%
	It is useful to be able to select recently used items when clicking on the address fields	100%
	View a route recently planned is simple	70%
	Navigate around the map is easy	85%
	The purpose of saving a point or route is clear	75%
	The auto complete feature is useful	100%
	It is easy to modify a trip	65%
	TOTAL	**84%**
Appearance	It is avoided overload information	30%
	There are areas in White between objects to rest for the eyes	100%

	Colors are suited to WayFiS image	100%
	There are clearly visual hierarchies established	100%
	Length page isenough	95%
	Width page isenough	100%
	TOTAL	**88%**
Accessibility	The font size is large enough to view it.	75%
	The font type, typographic effects, alignment, line width and employees make reading easily	90%
	There is a high contrast between the font color and background	100%
	Web site is compatible with different browsers	
	You can print the page without problems	
	The download time is right	100%
	TOTAL	**91%**

Table 19-WayFIS Results Mobile Design Questionnaire

2.1 General Mobile

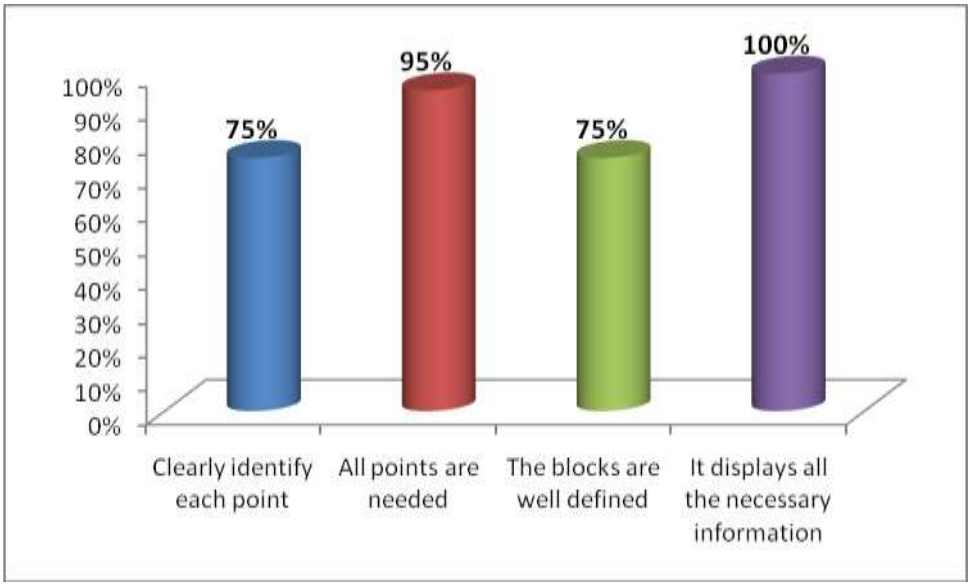

Figure 260- General Mobile

In the mobile design tests 75% of the seniors considered the buttons showed clear and that the blocks are well defined. Almost all of them said that all the points are needed. And 100% considered that it displays all the necessary information.

2.2 Identity and Information Mobil

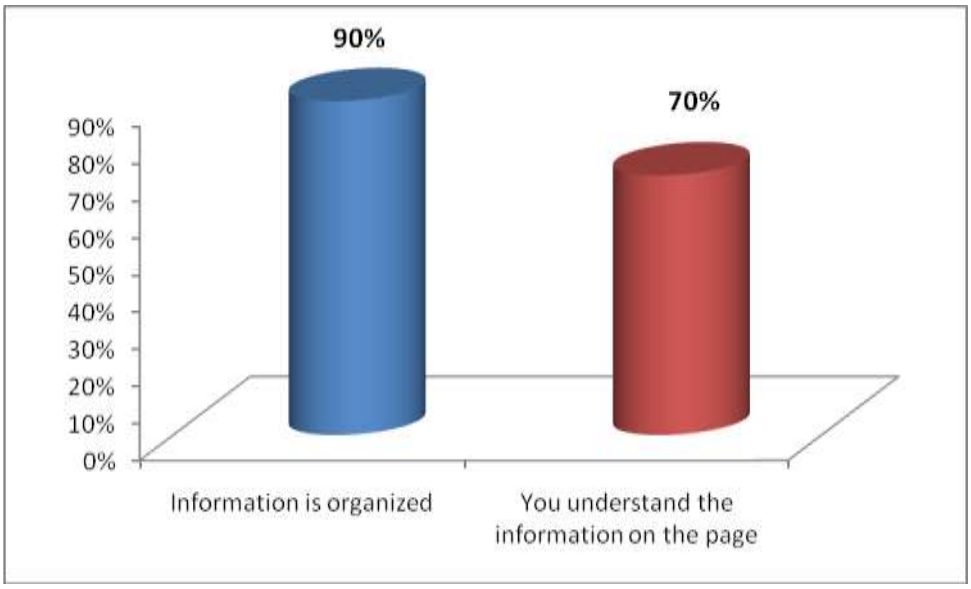

Figure 261-Identity and Information Mobile

90%considered the information is organized and understandable in order to use mobile application, but even so a little bit less than two third of them said that they understand the information on the page. They considered very useful the coincidence of them with their profile setting.

2.3 Labeled

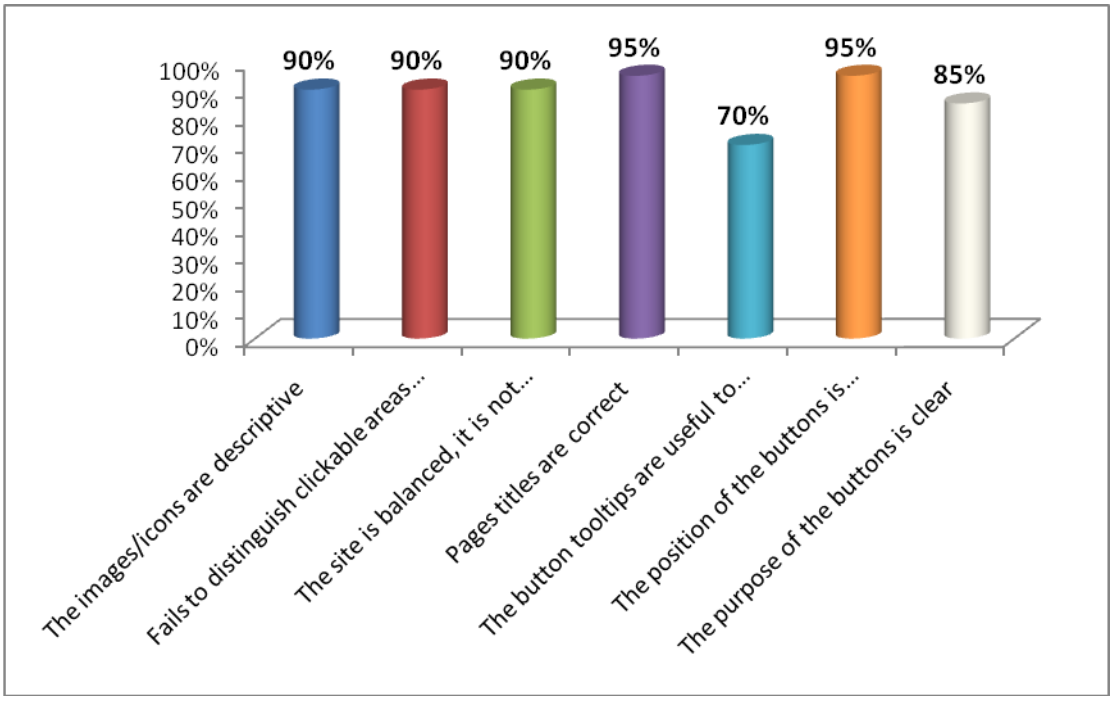

Figure 262-Labeled Mobile

Concerning the labeled 90% of the users considered the images and icons descriptive. The position of buttons are almost totally clear but they had some problems with the purpose of them. That's why 70% of the seniors were complaining about that the button tooltips are useful to understand their function.

2.4 Structure and Navigation Mobile

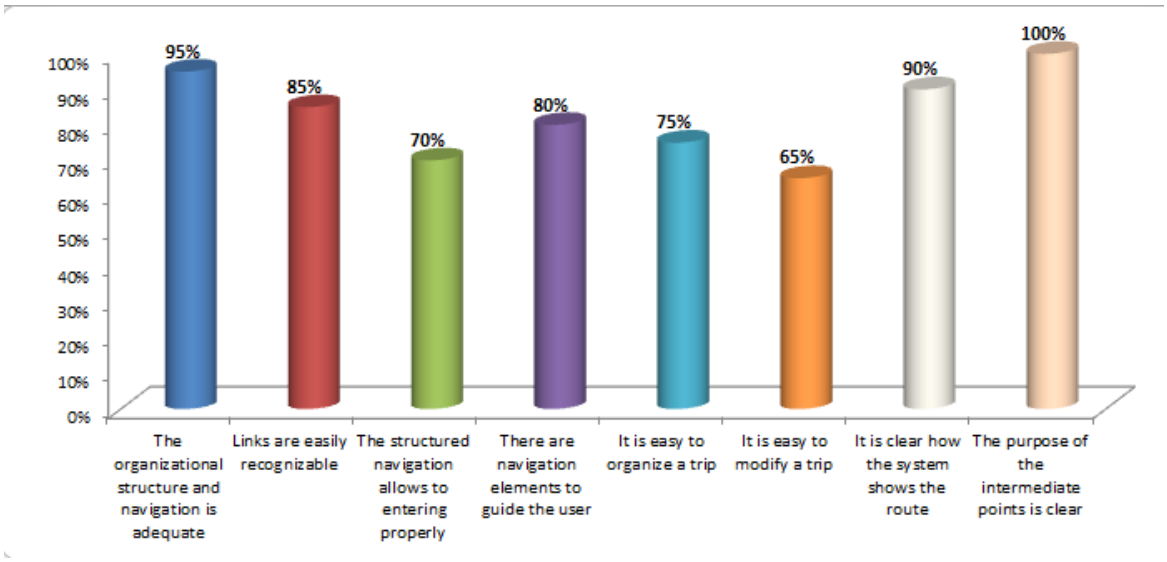

Figure 263- Structure and Navigation Mobile 1

About structure and navigation seniors commented is quit balanced. Navigation elements are useful to help them in order to plan a route. They understood how plan

the route, with GPS, from “My Sites” and “My Routes” but they had problems how to make it even if it was not the first time when they used the application. That’s why it is understandable that 75% of the seniors considered that it is easy to organize a trip and only 65% found it easy to modify it. With the modification they had the problem that they had to change the sites with go back and start to retype the address. But generally they found the application and the way of the planning with the PoIs, personal settings, intermediate point very useful and 90% of them also could understand well how the system shows the route.

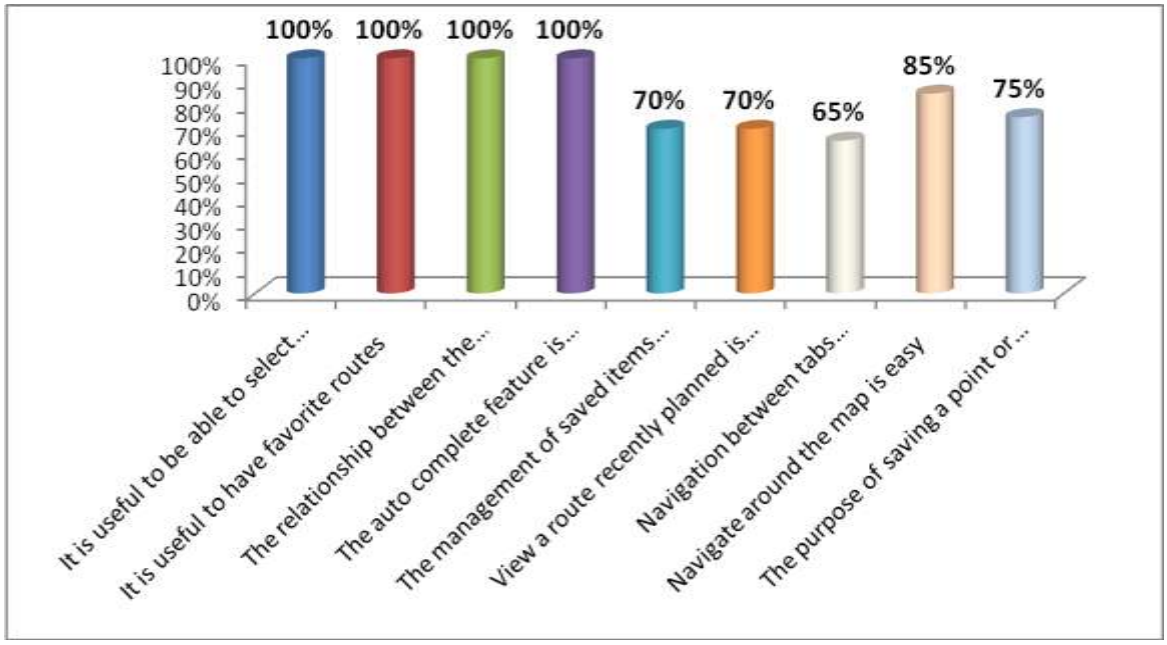

Figure 264-Structure and Navigation Mobile 2

As it happened in web application design tests, they considered a nice functionality “My routes” and “My places” in order to facilitate the route plan. Seniors considered very useful the autocomplete feature in order to complete an address in text table and the relationship between the personal settings and the planned route. They only had problems with the functionalities when they had to type a lot because their hands are not so good and because it was the first time they were using smartphones.

2.5 Appearance

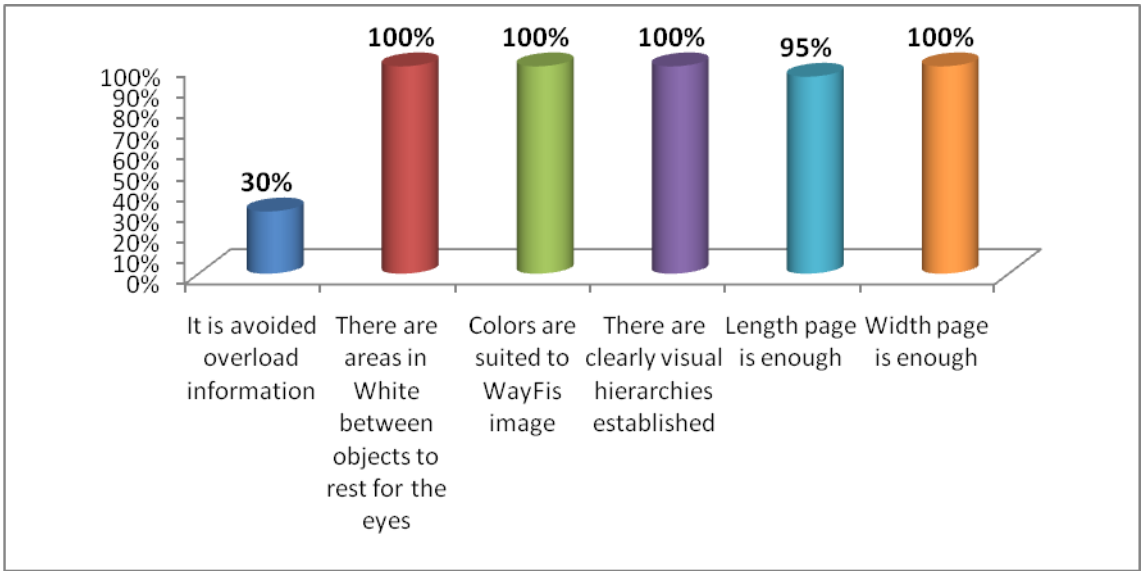

Figure 265-Appearance Mobile

In terms of appearance mobile application improved considerably relating the tests done in the first phase of the validation. 30% of the seniors considered avoided overload information and only one of them said that the length of the personal settings site can be shorter. But they found the other statements concerning appearance 100% good.

2.6 Accessibility

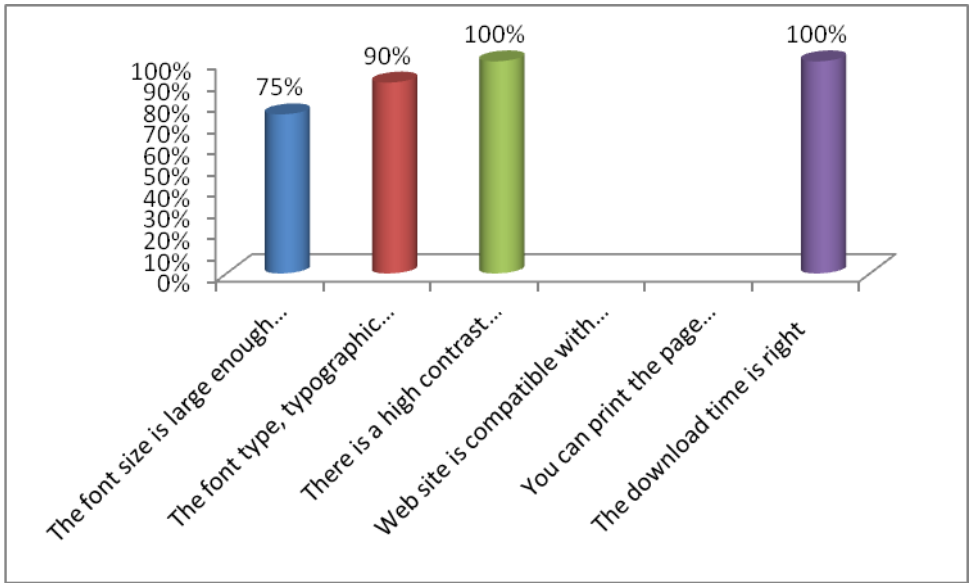

Figure 266-Accessibility Mobile

In terms of accessibility seniors answered that the font size much better in order to read the texts, but even so they think it could be bigger. 90% of them found the font type good and readable. With the contrast between the colors and the time of the download they did not have any problems at all. They found the application and the smartphone even too fast sometimes. Because the tests were done by mobile we didn't have any wireless printer possibilities for the questions of the appearance on a website and if the page is printable seniors didn't replied at all.

2.7 Suggestions

- Seniors suggested to translate to Hungarian the text in above commands and text tables when the route beginning.

Image93-Example of indications with text in English

- To increase the contents size in some sites like user account and My Routes sites:

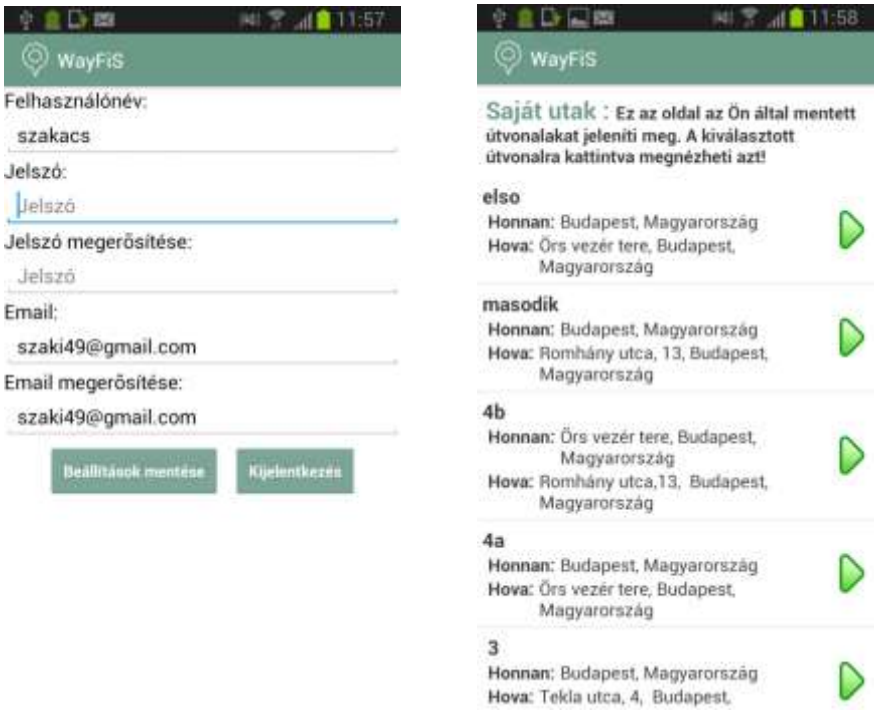

Image94-Example of font size could be increased

Conclusions

Generally seniors commented WayFiS mobile application improved considerably, now is friendlier to use first of all because of the bigger font size.

- They were more comfortable with bigger font size, but on some sites like user account and My routes they would prefer even bigger font size.

- They understood now better the mobile application structure and organization as well the concepts of buttons and areas, but still they had some problems with some function of the buttons and they would prefer more help on the mobile app

- They still have problems with typing and with using the smartphone because of their hands and their no smartphone user skill. But after doing some more practice on Smartphone usage we are sure that seniors could be able to use the app with less difficulties.

- There are still some English words.

- They considered very useful the functionalities “My Routes” and “My Sites”, and they liked the PoIs also very much.

- They liked the color of the app very much.

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PROJECT Nº: AAL-2010-3- 014

Usability Tests Results (2nd Phase) Hungary

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Participant(s)	
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Classification	Internal
Version	V02
Total number of pages	25

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Usability tests-Hungarian Results

Mobile tests

The usability tests were developed in 2 places: at the SMIMO on 21st August 2013 and at the BZN on the 22nd August. At the SMIMO the tests were taken by 4 senior women with age between 64 and 78 years old. At the BZN we asked 2 of our internet user colleagues from which 1 was a man with the age 54 and 1 was woman at the age 74. In order to develop usability tests it was used the WayFiS mobile application V11, and 4 smartphones with Android System on Samsung SIII.

Image 95-Wayfis Usability tests (Hungary)

Image 96-Wayfis Usability Tests (Hungary)

USABILITY QUESTIONNAIRE	
Date	
Name	
Age	
Gender	Male17% Female83%
Place of residence	☐ Big city (over 500 thousand) 83% ☐ medium sized city (100-500 thousand) 33% ☐ small town (10-100 thousand) ☐ village
Level of education	☐ No education/primary school 50% ☐ Secondary school ☐ College (diploma) 17% ☐ University 33%
Current employment status	☐ Free lancer ☐ Employee 33% ☐ Civil servant ☐ Labourer ☐ Housewife/-man ☐ Retired67% ☐ other_____
Computer skills	☐ Very high ☐ Rather high 33% ☐ Rather low ☐ Very low 33% ☐ Non 33%
First steps in the app	Time to switch on ☐ 1-10 seconds 33% ☐ 10- 20 seconds ☐ 20 – 30 seconds 33% ☐ More than 30 seconds 33%

	Registration	
	☐ Easy	33%
	☐ Rather hard	33%
	☐ Very hard, because	33%
	Signing in	
	☐ Easy	33%
	☐ Rather Hard	33%
	☐ Very hard, because	33%
Enter a departure, destination	Usability	
	☐ Easy to use	50%
	☐ rather hard to use	50%
	☐ hard to use, because	
	Changing of them(Departure and Destination address)	
	☐ Easy	33%
	☐ Rather hard to do	33%
	☐ Hard, because	33%
	The way how they appear color on the map is	
	☐ Good	100%
	☐ Good enough	
	☐ Could be better, like	
	The way how they appear size on the map is	
	☐ Good	83%
	☐ Good enough	17%
	Could be better, like	
Route	The way how it appear color on the map is	
	☐ Good	83%
	☐ Good enough	17%

	☐ Could be better, like	
	The way how it appear size the map is	
	☐ Good	100%
	☐ Good enough	
	☐ Could be better, like	
	If you want to change the route to do it is….?	
	☐ Easy	
	☐ Regular	33%
	☐ Difficult, because.....	67%
	The color of the arrows showed are…	
	☐ Good	100%
	☐ Good enough	
	☐ Could be better, like	
	The meanings of the arrows showed are…	
	☐ Good	67%
	☐ Good enough	33%
	☐ Could be better, like	
Screen	Images and letters are…	
	☐ Big enough	33/
	☐ Medium	67%
	☐ Small	
	The font type is …….	
	☐ Goo	100%
	☐ Good enough	
	☐ Could be better, like	

	Brightness of the screen is…	
	☐ Enogh	100%
	☐ Regular	
	☐ Bad	
	The information on the sites are	
	☐ Enough	50%
	☐ Regular	50%
	☐ Too much	
POI's	Your profile settings and the POI's showed to you…?	
	☐ Match exactly	100%
	☐ Just a few match	
	☐ It doesn't match at all	
	POI's simbology is understable…?	
	☐ Clearly	83%
	☐ Regular	17%
	☐ Not at all	
	POI's Showed along the route are…?	
	☐ Enough	100%
	☐ Too much	
	☐ Few	
Suggestions	Please feel free to share your opinion about the route plan	

Table 20-WayFiS Usability tests results (2nd Phase)

1.1 Gender

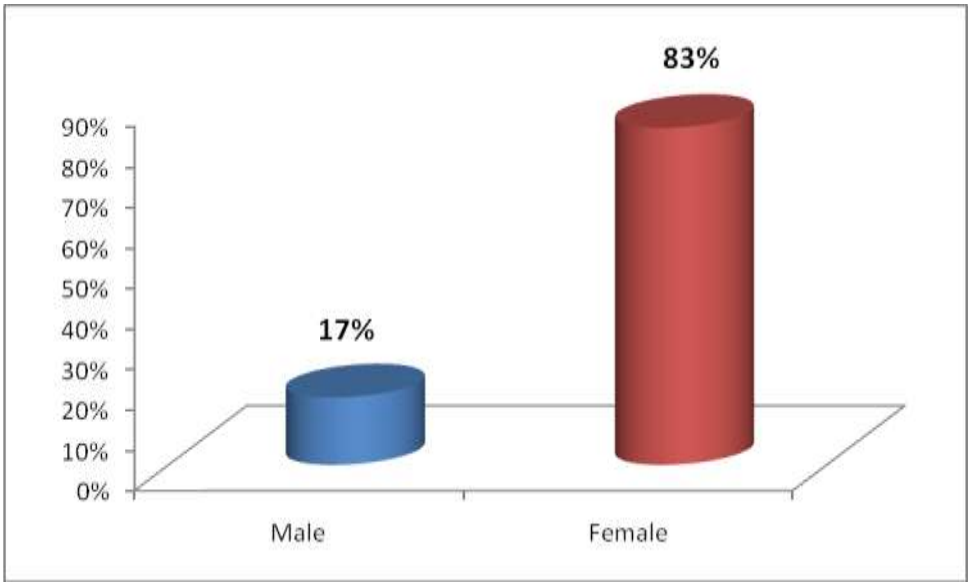

Figure 267-Gender

Concerning the gender of seniors 17% were men and 83% women.

1.2-Place of Residence

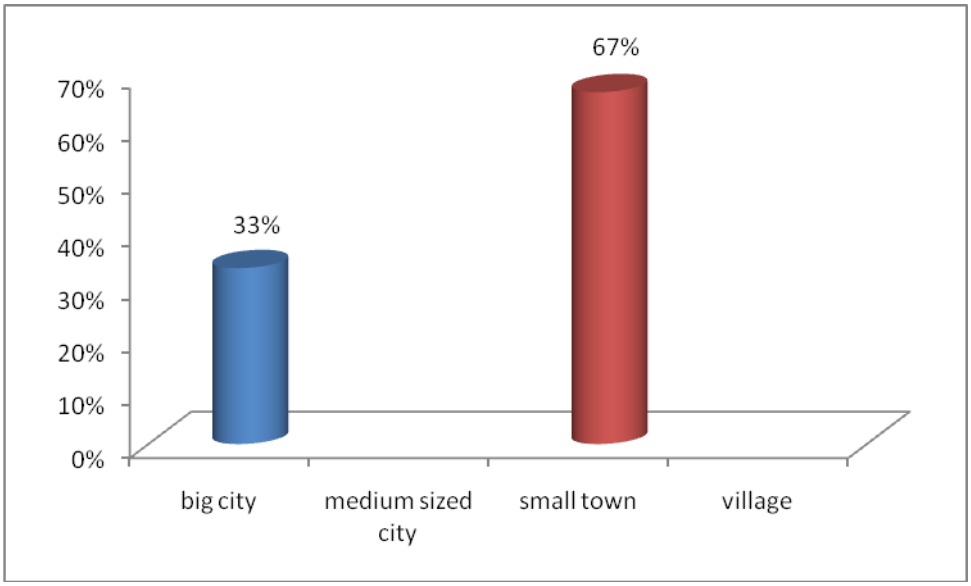

Figure 268-Place of Residence

The 67% of seniors tested have their place residence in a small town which is understandable because most of the seniors are living in Tökül.

1.3-Level of Education

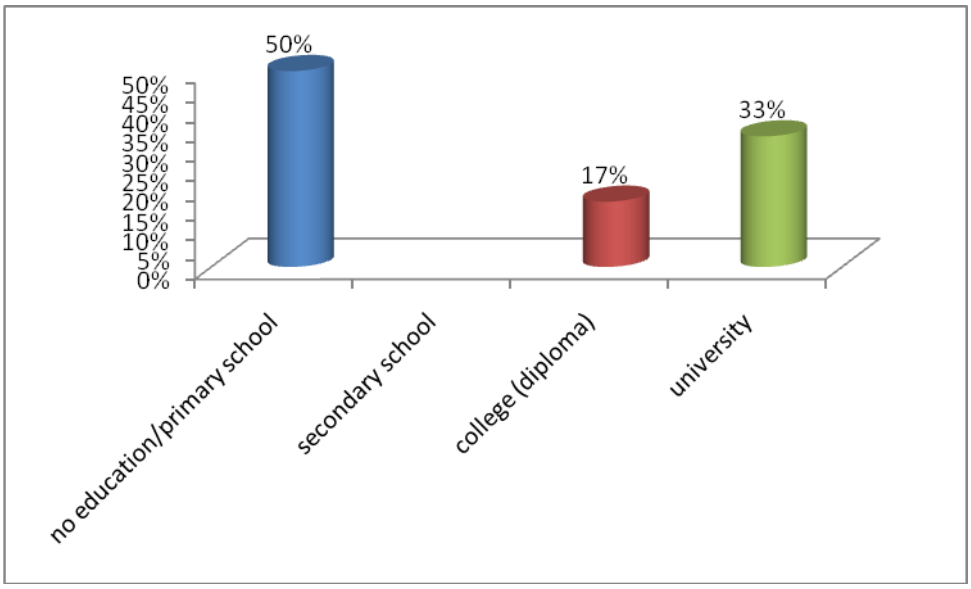

Figure 269-Level of education

About level of education 50% of seniors had no education or only primary school. college degree studies, 33% a college diploma and 33% had a university background

1.4-Current employment status

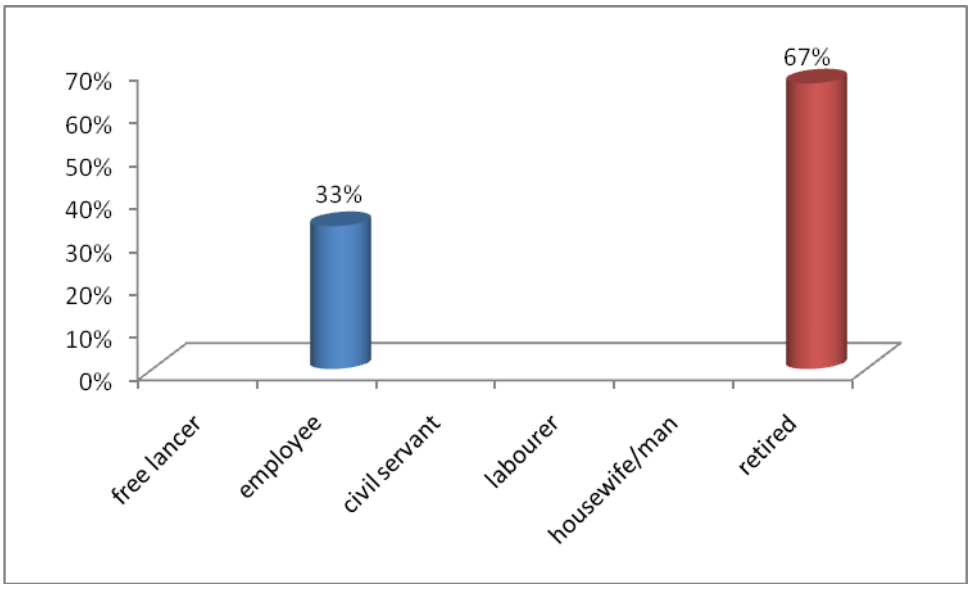

Figure 270-Current employment status

About their employment status 67% are retired and 33% are working as an employee.

1.5-Computer skills

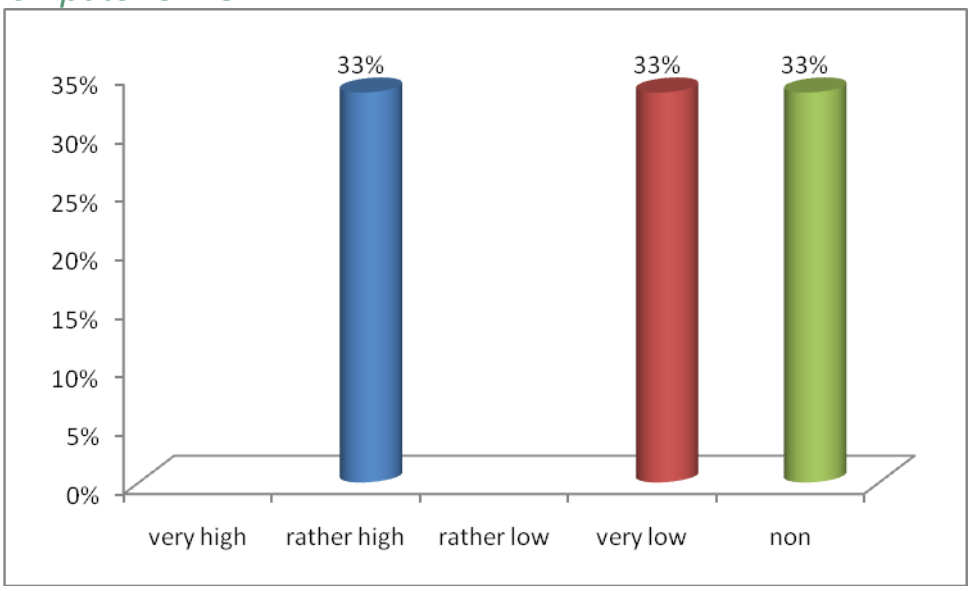

Figure 271-Computer skills

On third of the seniors' computer skills was rather high, very low and one third had no computer skills at all..

1.6-First steps in the app

1.6.1-Time to switch on

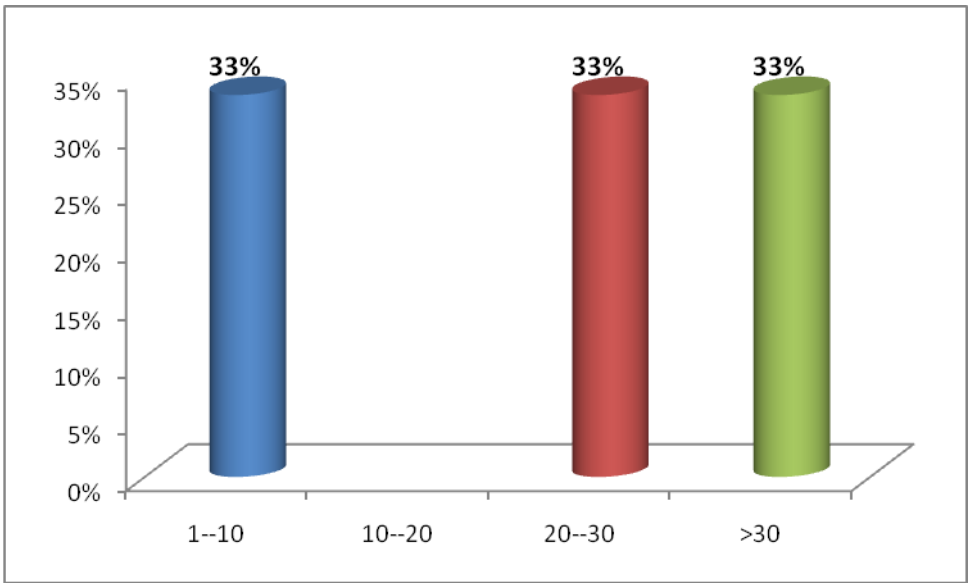

Figure 272-First steps in the app:Time to switch on

Concerning the time to switch the application only one third commented it is very quick between 1-10 seconds. For another two third (seniors from the SMIMO with less technical background) it took more than 20 sec.

1.6.2-Registration

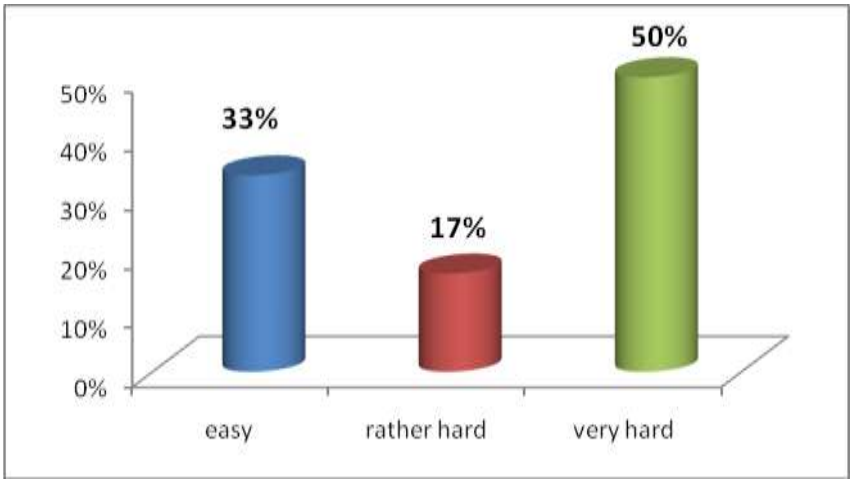

Figure 273-First steps in the app: Registration

In the case of registration procedure seniors commented again it is difficult by e-mail, because some of them do never use email. Those who use email every day (33%) the registration was easy, for another 17% it was rather hard and for half (50%9 of the seniors considered very difficult.

1.6.3-Signing in

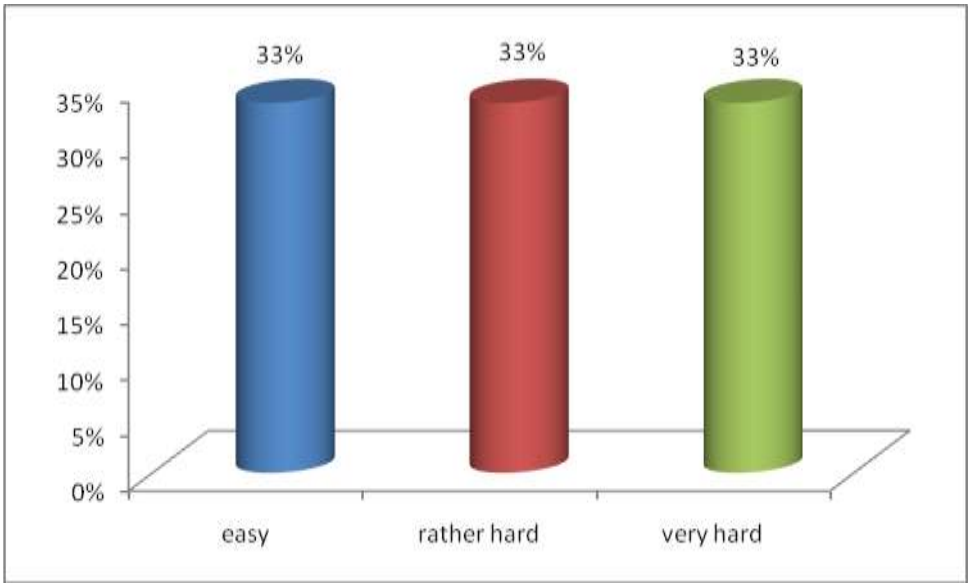

Figure 274-First steps in the app: Signing in

Concerning the signing in the application 33% commented it is easy to enter in WayFiS mobile application. For the other two third it was rather hard or very hard because of the size of the fonts.

1.7-Enter a departure, destination

1.7.1-Usability

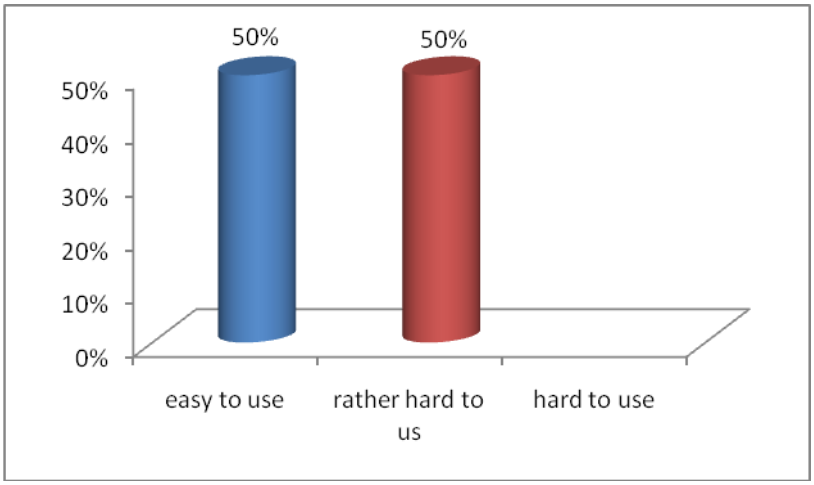

Figure 275-Enter a departure, destination: Usability

50% of seniors tested considered easy to introduce a departure or a destination in the application, their opinion changed considerably relating with last usability tests due especially to the increased font size, the autocomplete text command in text table departure/ destination, better understanding of “My sites” and “My routes”, to better use of GPS search button. 50% of seniors commented it is rather hard to use, due their problem with the keyboard.

1.7.2-Changing of them

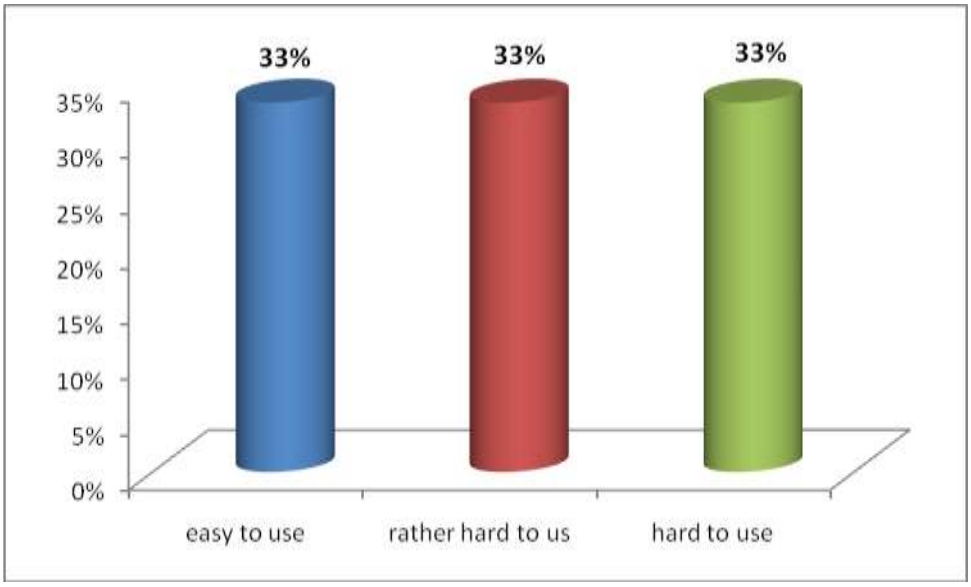

Figure 276-Enter a departure, destination: Changing of them

Changing the departure and destination was easier for the seniors in the second usability rests because the second phase tests at the SMIMO were done with the same elderlies like in the first phase' tests. All the categories got 33%.

1.7.3-The way how they appear colors on the map is..

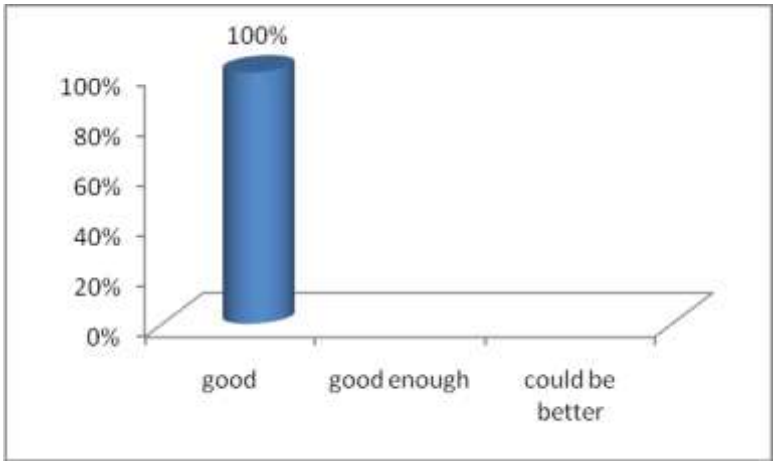

Figure 277-Enter a departure, destination: The way how they appear colors on the map is..

All of the seniors considered the way how they appear colors on the map is good. They find the colors very nice.

1.7.4-The way how they appears size on the map is..

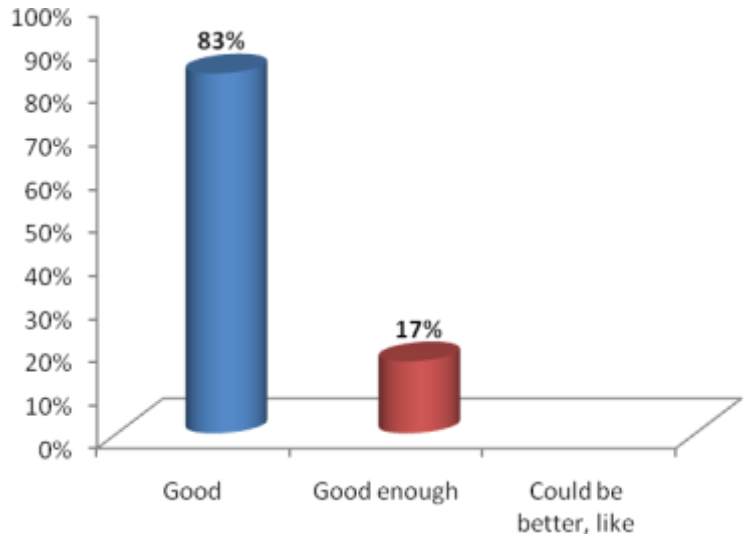

Figure 278-Enter a departure, destination: The way how they appear size on the map is…

Concerning the way how they appear size on map 83% of seniors commented it is good and only 17% considered good enough. Seniors again suggested it will be better if the zoom for the map will be available not only when the route is planned but also when the route is in course.

1.8-Route

1.8.1-The way how it appears colors in the map is…

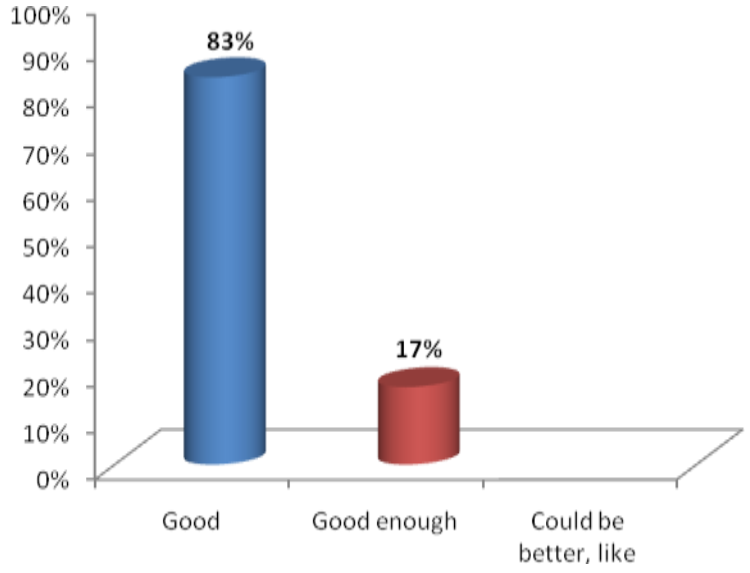

Figure 279-Route: The way how it appears colors in the map is..

Concerning the way how it appears colors in the map in the route 83% considered good and 17% good enough.

1.8.2-The way how it appears size in the map is…

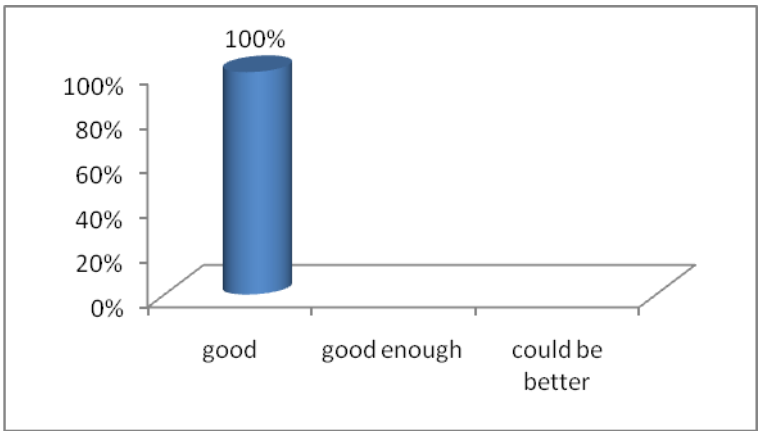

Figure 280-Route:The way how it appears size on the map is ..

When the route is displayed in navigation mode,100% of seniors considered the way how it appears size on the map is good. In this case the results were more positive than results obtained in previous validation.

1.8.3-If you want to change the route to do it is…..?

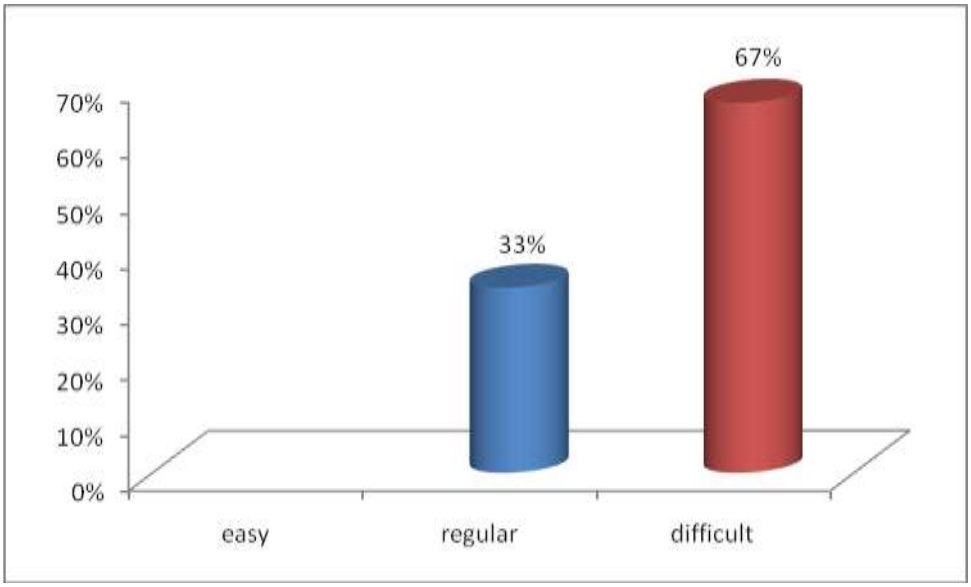

Figure 281-Route:If you want to change the route to do it is…?

In the case of change of the route 33% considered regular to change the route and 67% easy. They mostly have problems on going back to the site and with using the keyboard.

1.8.4-The color of arrows showed are…

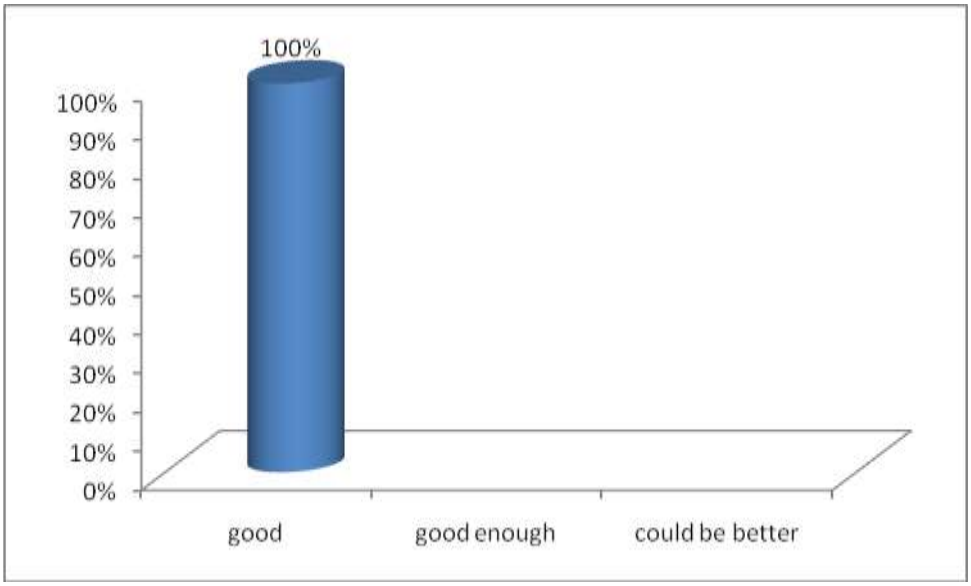

Figure 282-Route:The color of arrows showed are..

About the color of arrows showed in the mobile application 100% considered good.

1.8.5-The meanings of the arrows showed are…..

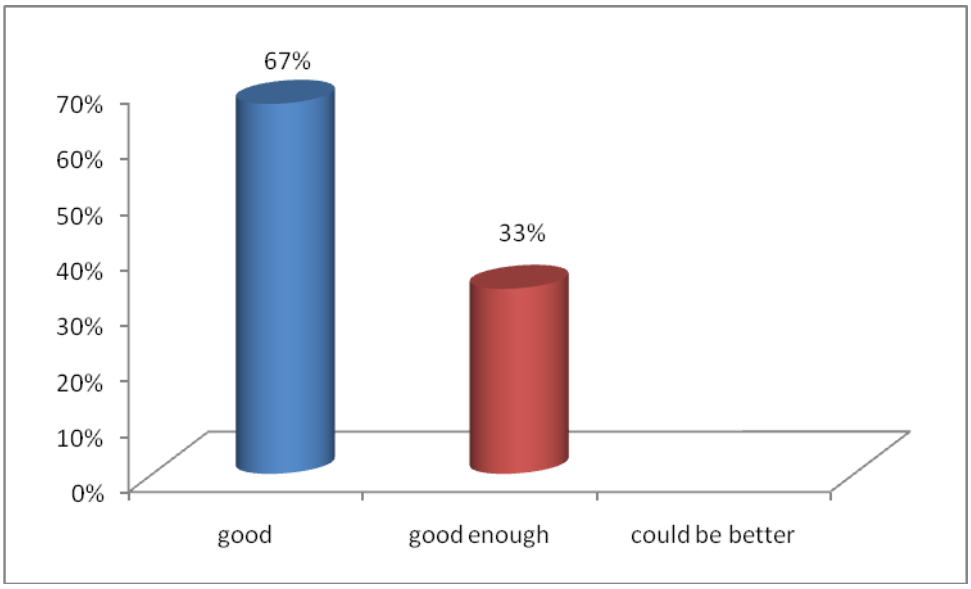

Figure 283-Route: The meanings of the arrows showed are…

In overall they understood the meaning of arrows 67% considered good and the other 33% good enough. They were just complaining about the meanings of the arrows showed during the details of the route when some English translations are still missing like road, etc.

1.9-Screen

1.9.1-Images and letters

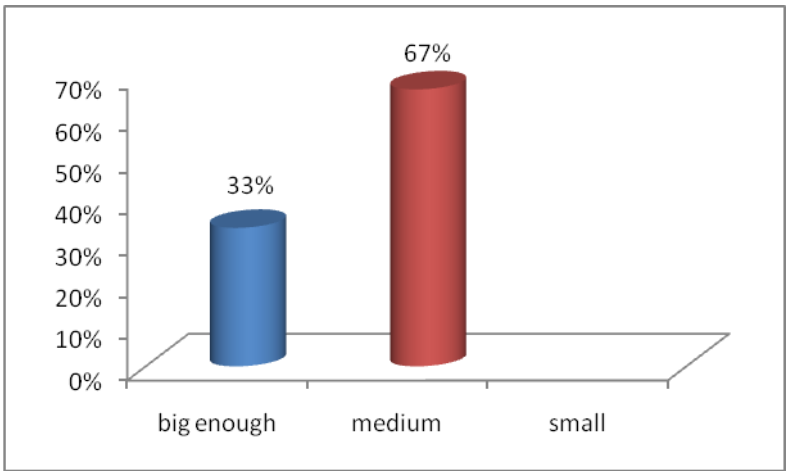

Figure 284-Screen: Images and letters

After the improvements done in mobile application in this moment 67% of seniors considered medium size and 33% big enough images and letters. It means that in the V11 they found the letters much bigger.

1.9.2-The font type is….

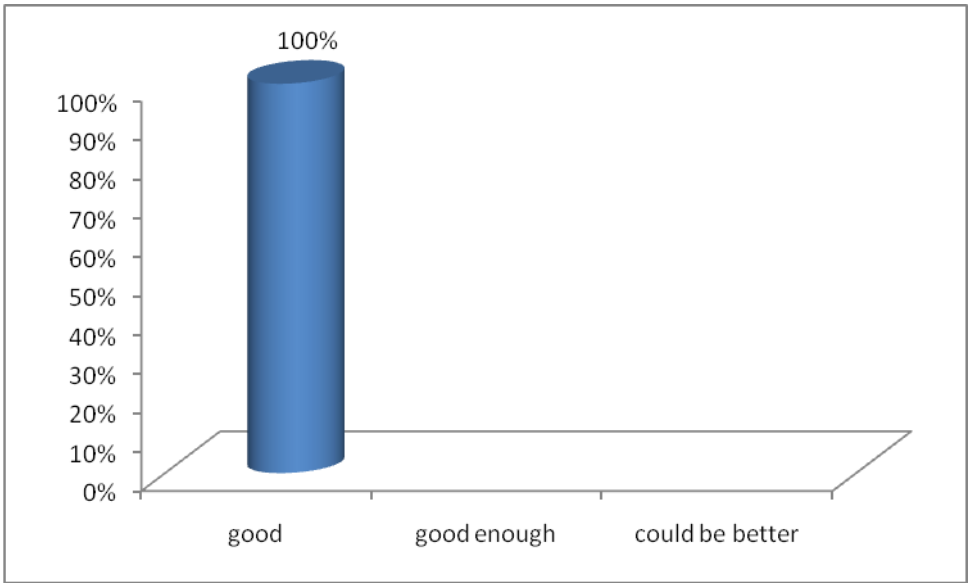

Figure 285-Screen: The font type is…

Relating font size all of the seniors considered that it is good because if they had problems with reading it was still related to the size and not the type of the font

1.9.3-Brightness of the screen is…

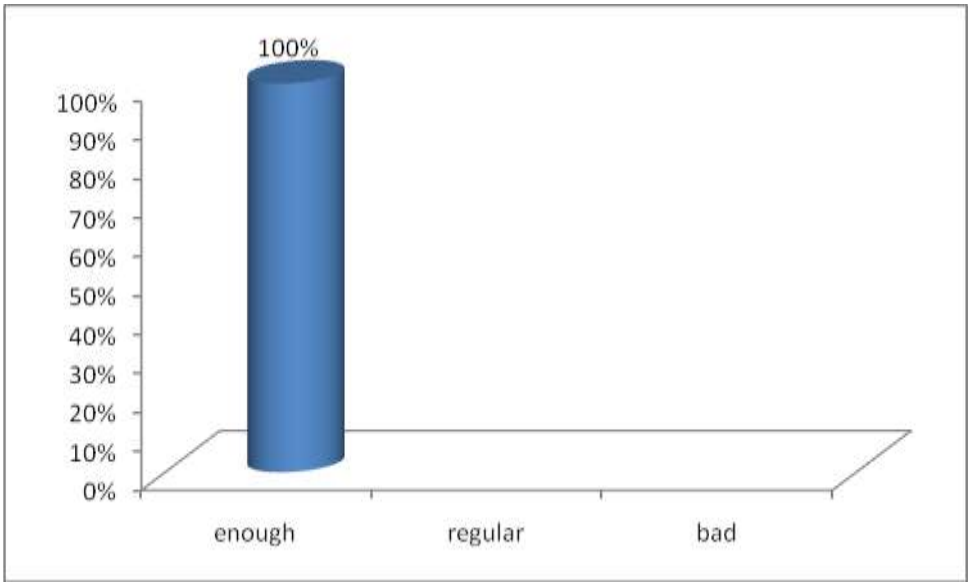

Figure 286-Screen: Brightness of the screen is….

Like in the first phase of the usability test concerning brightness of the screen the result was 100% in saying enough.

1.9.4-The information on the sites are….

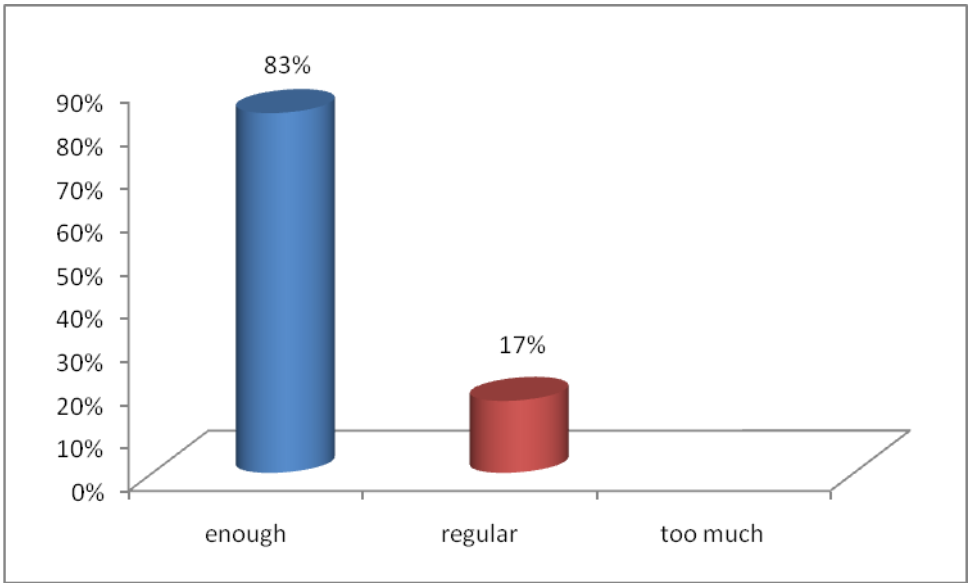

Figure 287-Screen: The information on the sites are…

Concerning the information on sites 83% considered it is enough and 17% regular.

1.10- POI's

1.10.1- Your profile settings and POI's showed to you…?

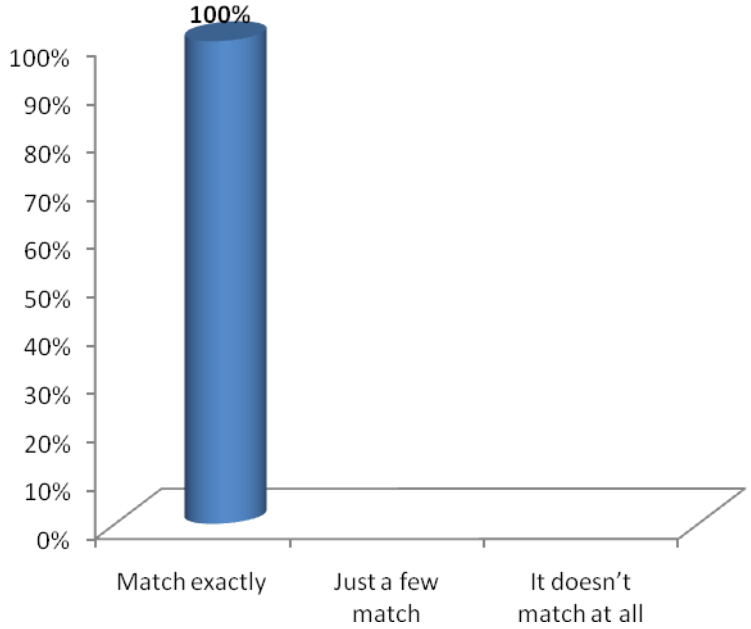

Figure 288-POI's: Your profile settings and POI's showed to you…?

In case of POI's showed 100% of seniors tested considered they match exactly with their profile settings.

1.10.2-POI's simbology is understandable…?

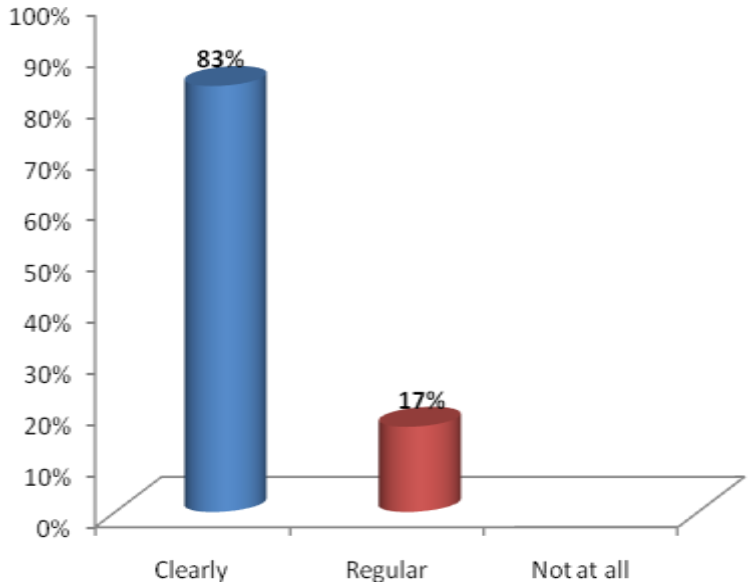

Figure 289-POI's:POI's simbology is understandable…?

83% of seniors tested considered POI's simbology is clearly understandable and 17% considered regular.

1.10.3-POI's showed along the route are….?

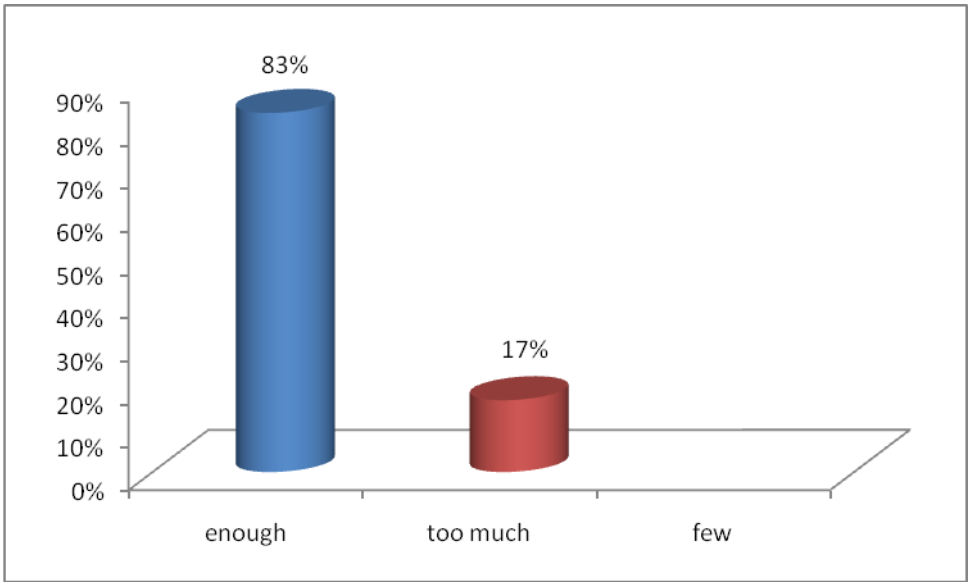

Figure 290-POI's: POI's showed along the route are…?

Concerning POI's showed along the route 83% considered them enough and only 17% considered too much because they would prefer having more pois during the whole route not just at the beginning of the route.

1.11-Suggestions:

- They suggested again using a different procedure in registration; they considered difficult the actual procedure taking into account they don't have e-mail address or they don't use it so often.

- Listen all the indications in a foreign language voice command was strange for them. As the text to speech capability was not available in Hungarian it could be good to turn it automatically off when Hungarian is selected as language. Or it would be also nice if later the application could be developed with the Hungarian text to speech capability because the seniors told me that it would be helpful for them, too.

- They prefer an easier way for changing the departure, destination.

  They suggested enabling to access the "My sites" table directly from the route planning page.

- They could save my sites with the same name (like here varbol) which can be confusing:

Image97-Example of problems with my places

- Seniors suggested again that it will be better if the zoom on the map will be available not only when the route is planned but also when the route is displayed in the navigation mode.

- Some translations of the arrows are missing

Conclusions:

In overall seniors verified important improvements in mobile application in concrete:

- They liked the bigger font size, but they would prefer bigger text tables to introduce destination and departure addresses.
- They still would prefer a bigger keyboard because for them it is still hard to use it!

- They would be happy if they could add the house number in the application.

- They liked the colors of the application very much

- They would like to zoom more on the map after planning the to see the name of the street correctly.

- Seniors considered “My sites” and “My routes” functionalities very useful to plan a route, and very interesting the commands “Back” and “New route from here” as well autocomplete text function.

- They would prefer to use my sites at the planning site, too.

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Mobility Test Results (2nd Phase) Hungary

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1. Mobility Tests-Hungary Results

Mobility tests in Hungary were done two days with 6 elderlies from the SMIMO (Tökül) on the 14th and on the 21st of August. All the tests were done in Budapest by developed mobile applications (V11) on Samsung Galaxy SIII smart phones. Every time seniors from Tökül took an organized private bus to got to Budapest and then they used the walking and the public transports for testing the mobile application with the help of Petra Csobánka and some workers from the old-aged house. Within two days 18 tests were done by them.

During this time one man also tested the mobile application (V11) in Budapest by Samsung Galaxy SIII. He could test the application in longer ways because of his better physical status. He could make 7 tests with the application. So all together 25 tests were done in the 2nd phase of testing the mobile application with the V11.

Image 98-Wayfis Mobility Tests (Hungary)

Image 99-Wayfis Mobility Tests (Hungary)

Image 100-Wayfis Mobility Tests (Hungary)

Image101- WayFiS Mobility Tests (Hungary)

TRAVEL QUESTIONNAIRE	
Date	
Name	
Age	
Gender	☐ Male 25% ☐ Female75%
Level of education	☐ No education/primary school 50% ☐ Secondary school ☐ College (diploma) 25% ☐ University 33%

Current employment status	☐ Free lancer ☐ Employee ☐ Civil servant ☐ Labourer ☐ Housewife/-man ☐ Retired 100% ☐ other_____
Travel date	
Travel start time	
Origin	
Destination	
Reason for travel	
Transport used	☐ Walking 100% ☐ Bus 12% ☐ Train 4% ☐ Underground 28% ☐ Tram 44% ☐ Others….
Travel with:	☐ Alone 24% ☐ Other Relatives ☐ Spouse or partner ☐ Some friends 76% ☐ Formal/Informal caregiver ☐ Others
Turn on the application	Time to switch on ☐ 1-10 seconds 32% ☐ 10- 20 seconds 32% ☐ 20 – 30 seconds 32% ☐ More than 30 seconds 4%
Finding a departure, intermediate, destination point in the system	Finding the actual position with the button ☐ Exactly 80% ☐ In the 5-10 meters 20% ☐ More than 10 meters
	Finding the departure point by writing ☐ Exactly 44% ☐ In the 5-10 meters 48% ☐ More than 10 meters 8%

	Finding the departure point	
	☐ Exactly	72%
	☐ In the 5-10 meters	28%
	☐ More than 10 meters	
	Finding the intermediate point	
	☐ Exactly	60%
	☐ In the 5-10 meters	40%
	☐ More than 10 meters	
	No applicable	
	Finding the destination point	
	☐ Exactly	68%
	☐ In the 5-10 meters	24%
	☐ More than 10 meters	8%
	Accuracy regarding the departure, destination	
	☐ Exactly	48%
	☐ In the 5-10 meters	52%
	☐ More than 10 meters	
	Speed in founding the points	
	☐ 1secons-10 seconds	100%
	☐ 10- 20 seconds	
	☐ 20 – 30 seconds	
	☐ More than 30 seconds	
The planned route	The route planned by the app is understandable:	
	☐ Totally	84%
	☐ Mostly	16%
	☐ It could be better, like …..	

	The offered transports were correct Totally 76% Mostly 24% Not at all
	The time showed for the linked transport were correct Totally 80% Mostly 20% Not at all
	The appeared commands during the route are…. Helpful, understandable… 36% Regular 56% Bad 8%
	Changing between routes is Clearly 24% Regular 44% Bad 32% New route not found
	Images and letters during the route are… Big enough 60% Medium32% Small 8%
	Speed changing between routes is 1secons-10 seconds 24% 10- 20 seconds 28% 20 – 30 seconds 32% More than 30 seconds 16%

	☐ New route not found
Screen	Brightness of the screen is… ☐ Enough 88% ☐ Regular 12% ☐ Bad
POI's	POI's simbology is understable…? ☐ Clearly 92% ☐ Regular 8% ☐ Bad No POI's available
	During your trip your profile settings and the POI's showed to you…? ☐ Match exactly 100% ☐ Just a few match It doesn't match at all
	POI's s Showed during your trip are…? ☐ Enough 96% ☐ Too much ☐ Few 4%
Routes	If you want to change the route to do it is….? ☐ Easy 24% ☐ Regular 40% ☐ Difficult 36%

	If you choose the wrong path, the time it takes to tell you is...? □ 1secons-10seconds100% □ 10- 20 seconds □ 20 – 30 seconds □ More than 30 seconds New route not found
Accessibility	In case you make use of a specific route because a mobility aid ..? □ Is optimal 88% □ Regular 4% □ It doesn't show any different 8%
Suggestions	Please feel free to share your opinion about the route planner

Table 21-WayFiSMobility Tests Results 2nd Phase

1.1-Gender

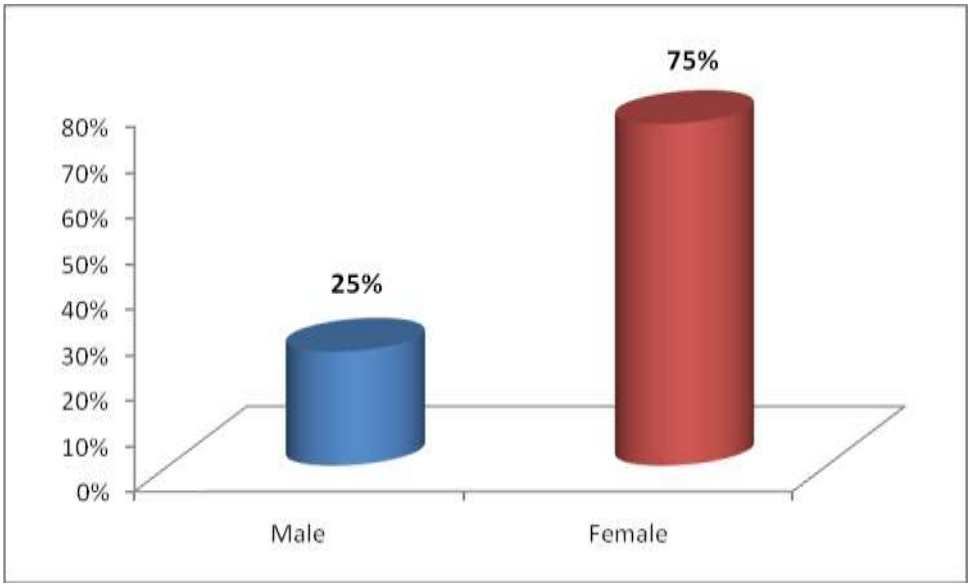

Figure 291-Gender

Concerning the gender of seniors tested 75% were women and 25% men.

1.2-Level of Education

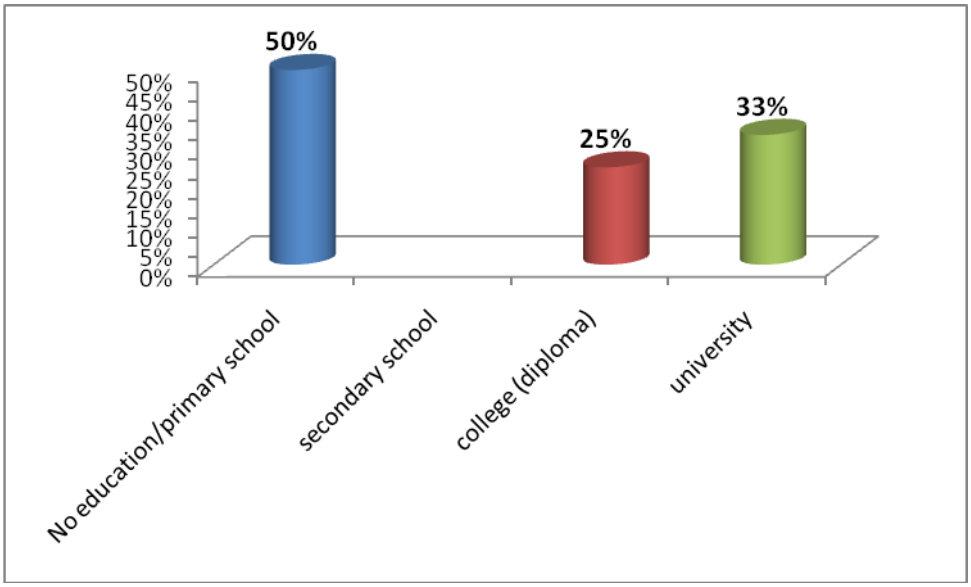

Figure 292-Level of education

Relating level of education seniors are divided in different levels of education in concrete: 50% were seniors with no education/ primary school, 25% were seniors with college and 33% with university studies.

1.3-Current employment status

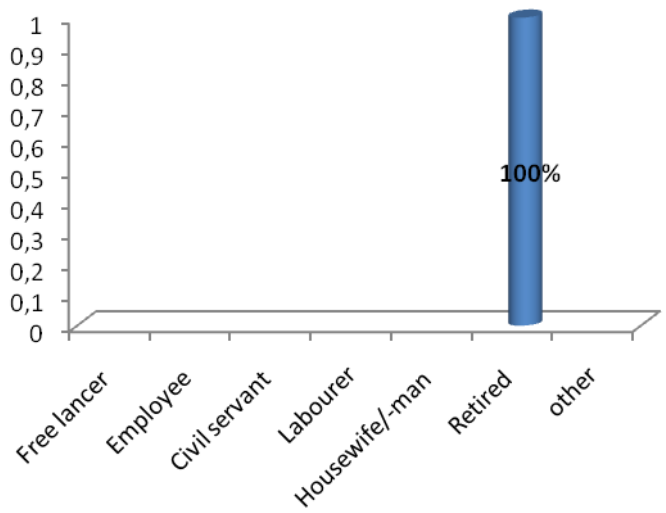

Figure 293-Current employment status

In the second phase of mobility tests developed in Tököl 100% of seniors tested were retired.

1.4-Transport used

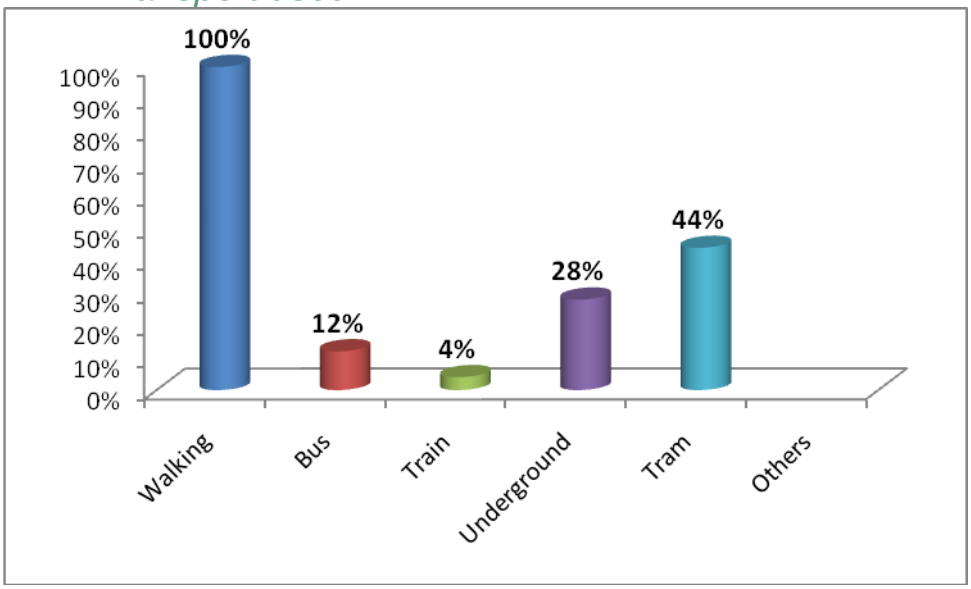

Figure 294–Transport used

In second mobility tests all the tests were done in Budapest. With the seniors from Tököl we travelled to Budapest by a private bus and then we used the public transport. The men also tested the mobile application in Budapest during his daily travelling.

1.5-Travel used with..

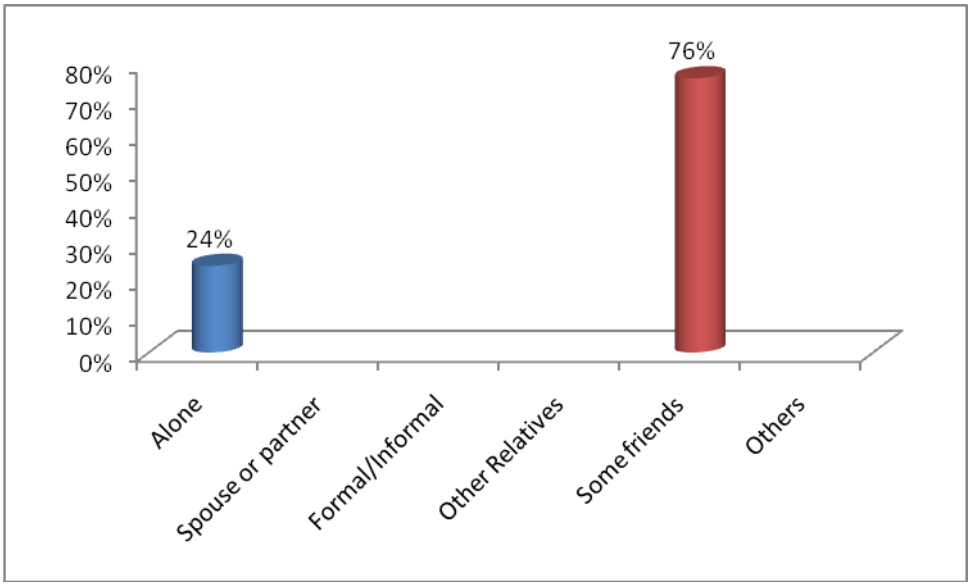

Figure 295-Travel with:..

Seniors from Tökül travelled always with friends which is 76% of the al tests. There were only one senior who always traveled alone.

1.6-Turn on the application: Time to switch on

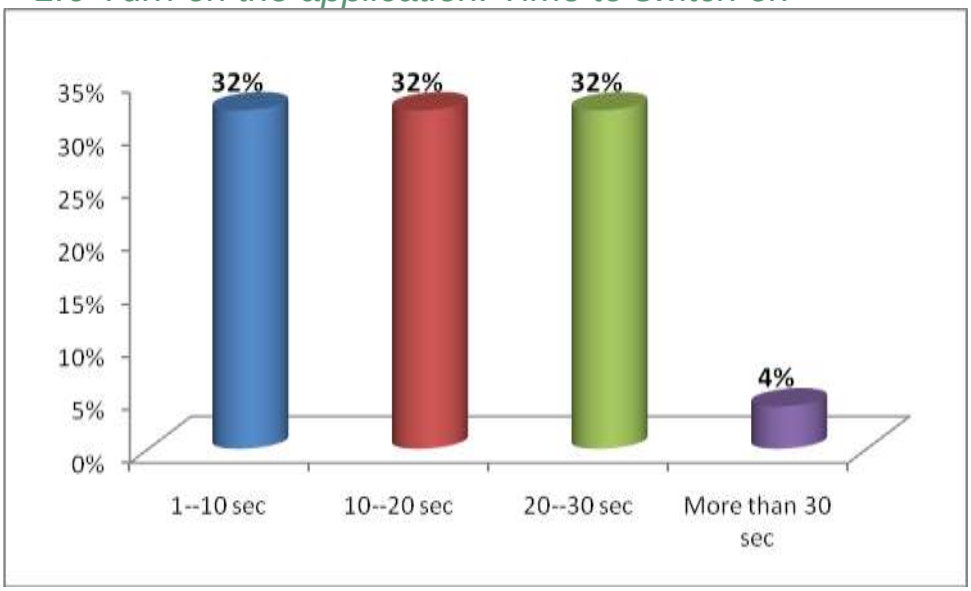

Figure 296-Turn on the application: Time to switch on..

Concerning the time to switch on the application users from Tökül considered the procedure quit hard. Only the more experienced man could to that within 1-12 sec. 4% of the seniors could only turn on the application within more than 30 sec..

1.7-Find a departure, intermediate, destination point in the system

1.7.1-Finding the actual position with the button

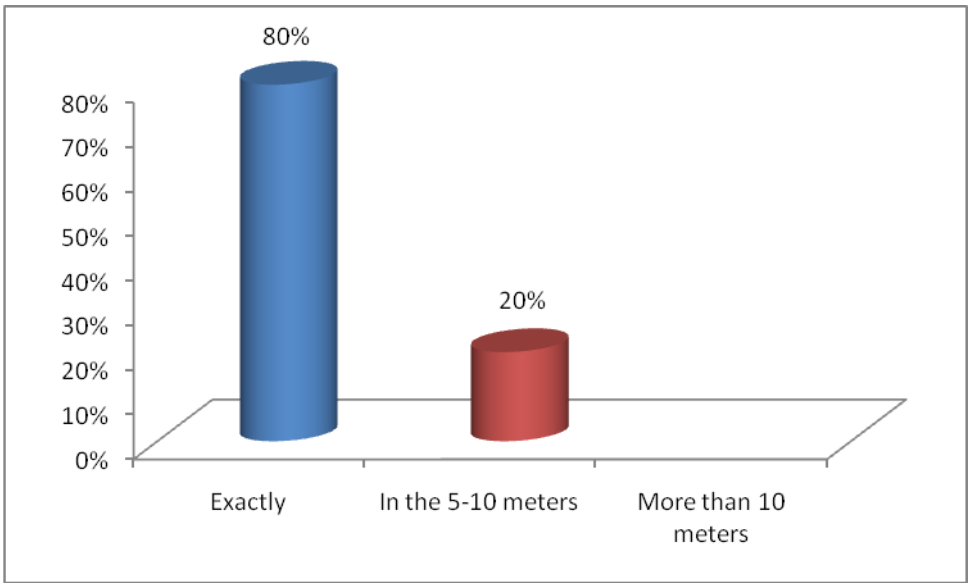

Figure 297-Find a departure, intermediate, destination point in the system: Finding the actual position with the button

In Budapest finding the actual position with the button worked quit well. 80% answered exactly and only 20% answer between 5-10 meters.

1.7.2-Finding the departure point by writing

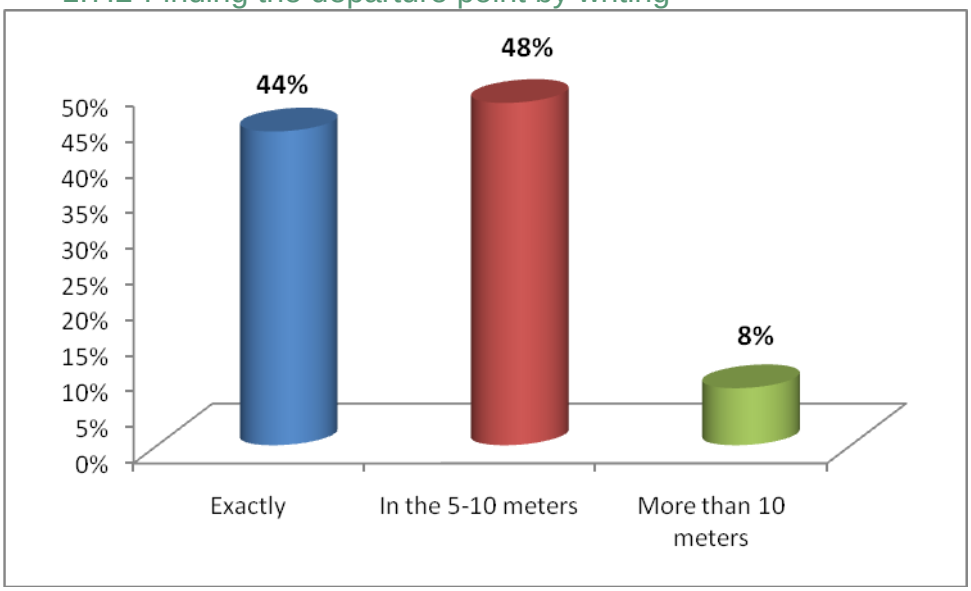

Figure 298-Find a departure, intermediate, destination point in the system: Finding the departure point by writing

Finding the departure point by writing always worked less good than the 1.7.1. 44% said that the point matched exactly, 48% said that there was 5-10 meters different and there were some points which have been found with more than 30 meters.

1.7.3-Finding the departure point

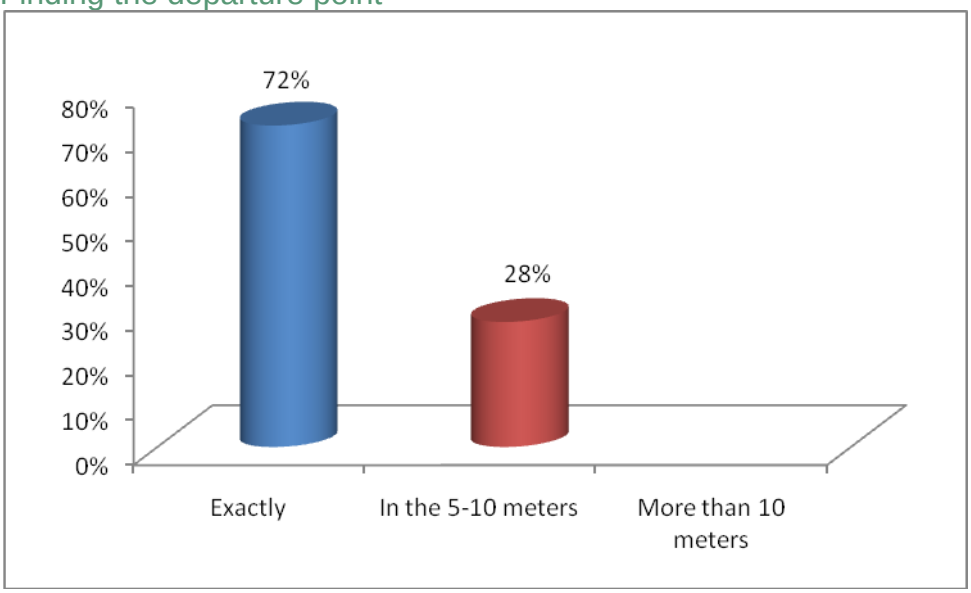

Figure 299-Find a departure, intermediate, destination point in the system: Finding the departure point

In this case to find the departure point in map 72% of users tested commented exactly and 28% commented in 5-10 meters.

1.7.4-Finding the intermediate point

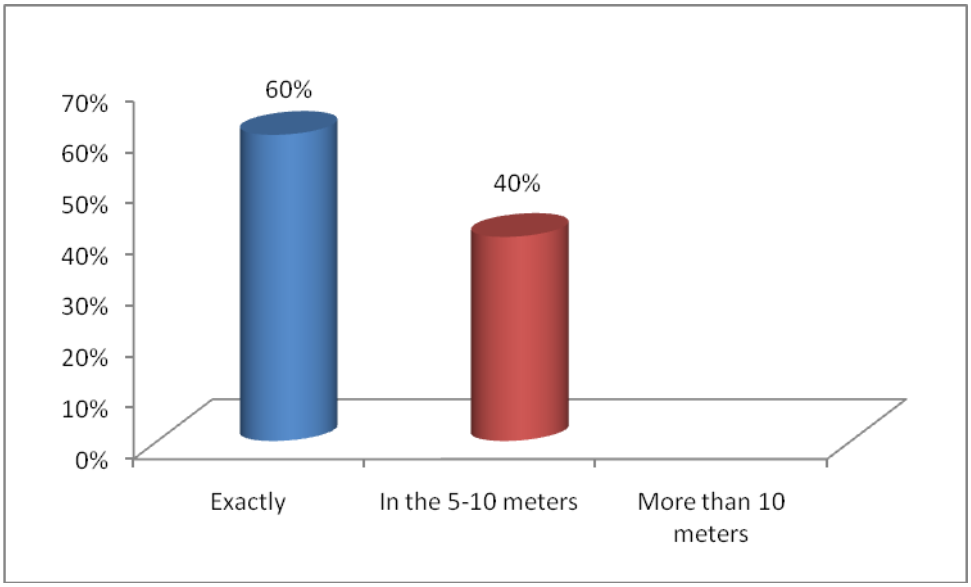

Figure 300-Find a departure, intermediate, destination point in the system: Finding the intermediate point

Relating the question to find an intermediate point 60% of seniors answered the mobile application finds it exactly and 40% answered in 5-10 meters.

1.7.5-Finding the destination point

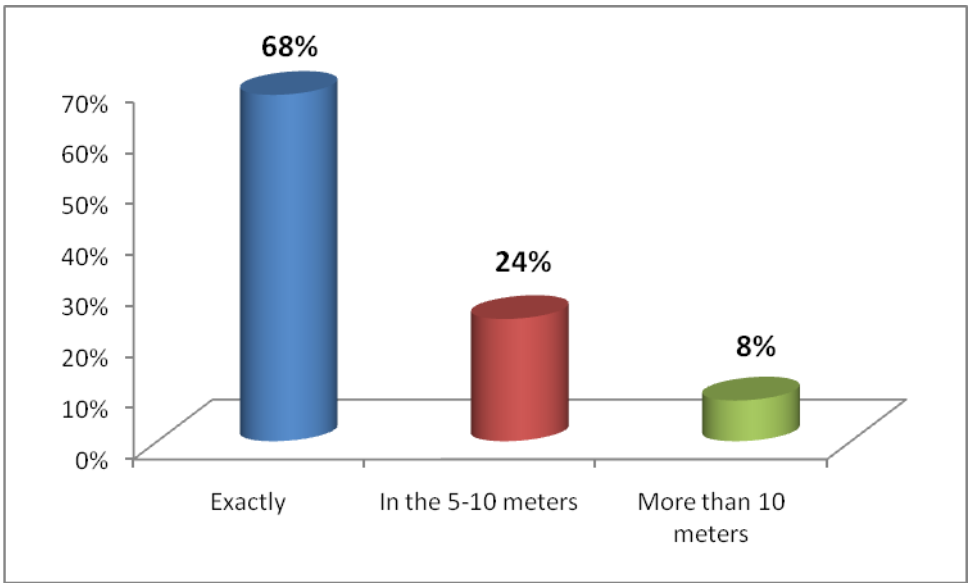

Figure 301-Find a departure, intermediate, destination point in the system: Finding the destination point

The destination point was always given by typing. How it looked like from the result of the 1.7.1finding the actual point with the button was more exact. In this case it is not surprising that 68% of seniors tested considered WayFiS mobile application finds a destination point exactly and 24% considered between 5-10 meters and 8% said more than 10 meters when they wrote the address or clicked the destination point in the map.

1.7.6-Accurancy regarding the departure, destination

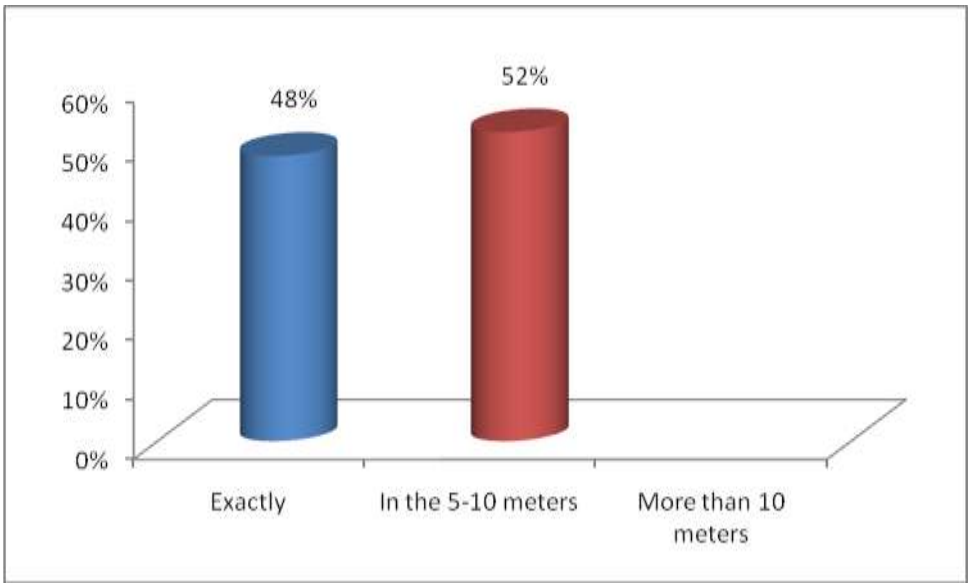

Figure 302-Find a departure, intermediate, destination point in the system: Accuracy regarding the departure, destination

Concerning accuracy regarding the departure and destination reflected in the map 48% answered exactly and 52% between 5-10 meters.

1.7.7-Speed in found the points

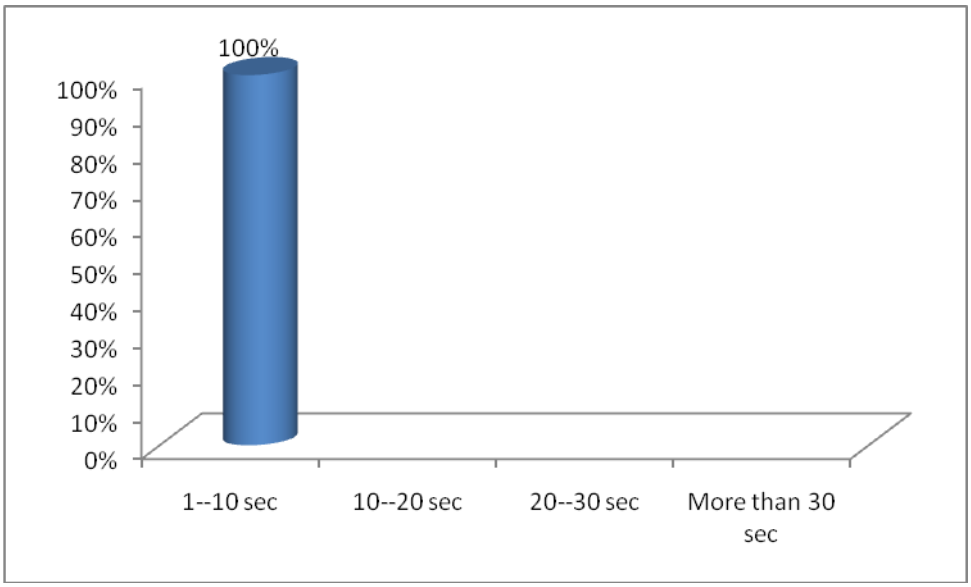

Figure 303-Find a departure, intermediate, destination point in the system: Speed in founding the points

About the speed in found points senior's answers like in the previous tests were really good. 100% found the speed very fast..

1.8-The planned route

1.8.1-The route planned by the app is understandable..

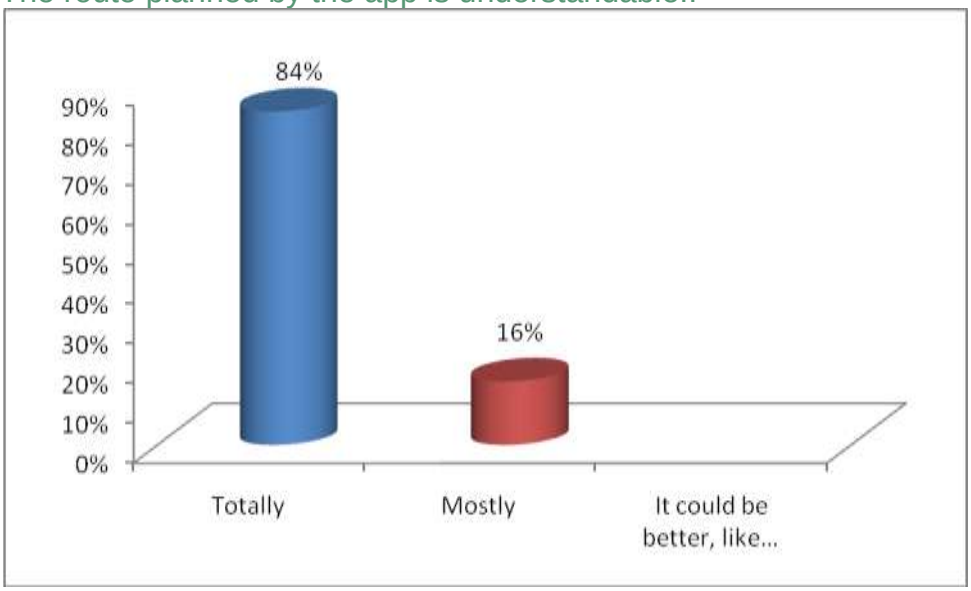

Figure 304- The planned route: The route planned by the app is understandable..

Most of the seniors, 84% found the planned route understandable. Sometimes people from Tökül checked the route together and in this case they could found out the way together. Only 16% said that the planned route by the app is mostly understandable. There was no one who would say she or he could not understand the route.

1.8.2-The offered transport were correct..

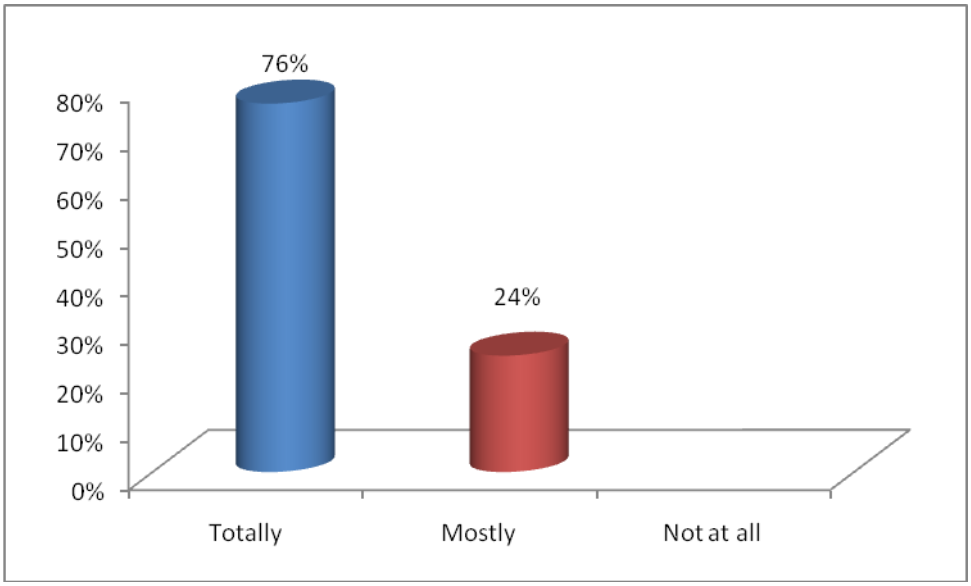

Figure 305- The planned route: The offered transport were correct..

76% of the used transports were correct and 24% matched mostly. Seniors were complaining about the problem when more transport could be good for them, but the app only suggested one so they were afraid of taking another (also good) transport than the suggested one.

1.8.3-The time showed for the linked transport were correct..

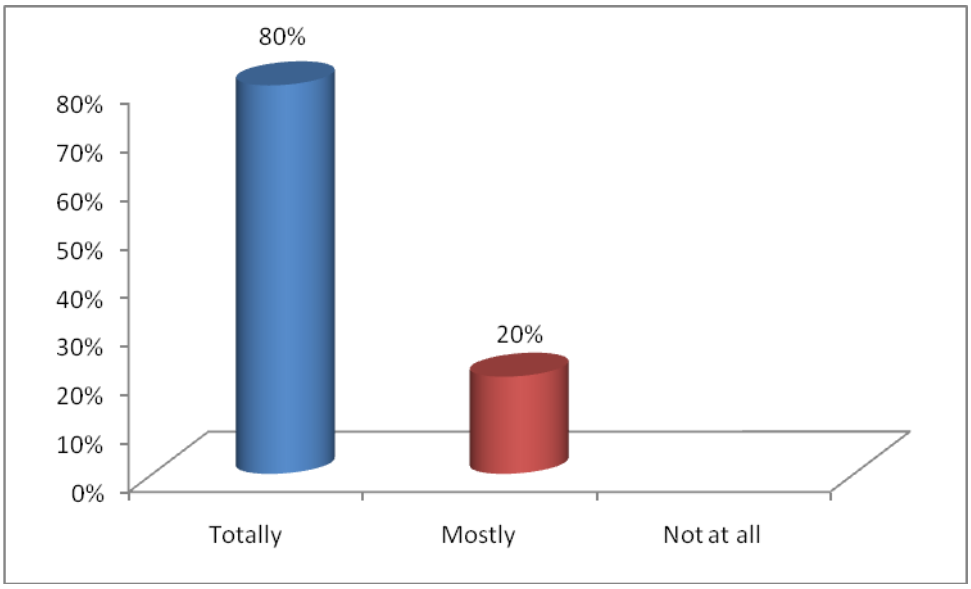

Figure 306- The planned route: The time showed for the linked transport were correct.

Most of the time, in 80% of the .used transports the time was correctly showed and only 20% matched mostly.

1.8.4-The appeared commands during the route are…

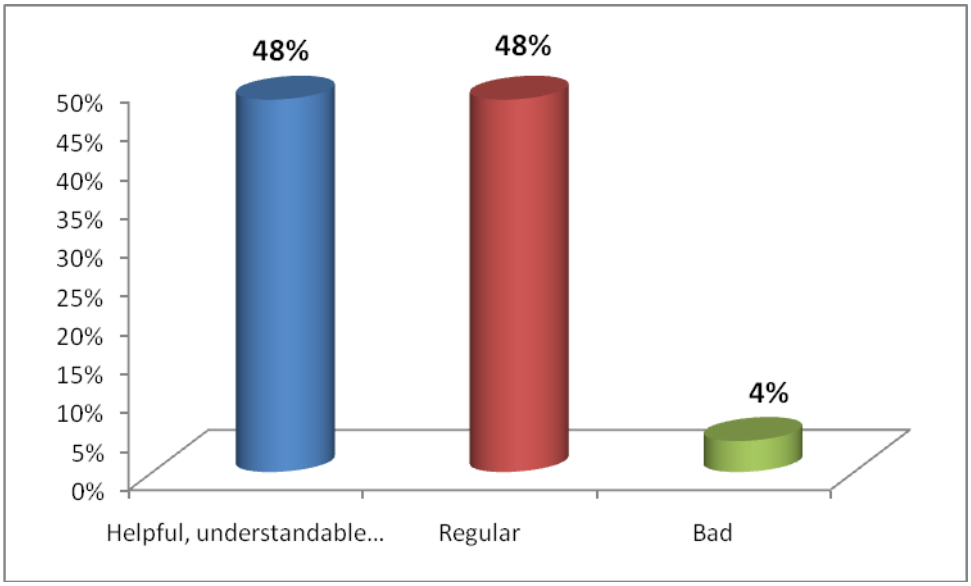

Figure 307-The planned route: The appeared commands during the route are…

Relating the commands that appear in the route 48% considered helpful and understandable and 48% regular. Only 4% said that the comments were bad. Sometimes the commands during the time when they should change a transport appeared like they were arrived to the destination.

1.8.5-Changing between route is..

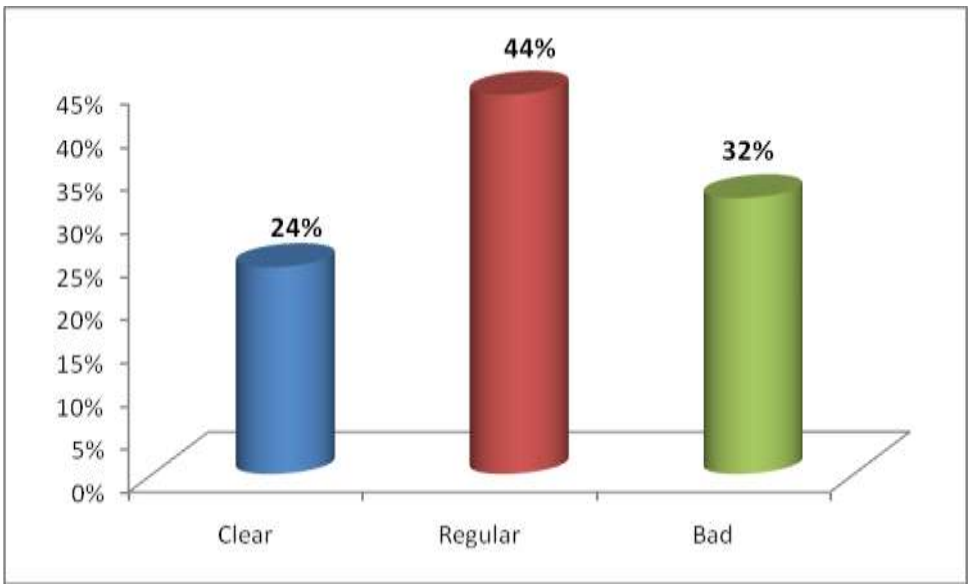

Figure 308-The planned route: Changing between route is…

Due the improvements done in WayFiS mobile application senior's answers relating this question were more positive than previous validation answers even if most of the people still had problems with changing between sites and typing the points again. Even so 24% of seniors tested answered clearly, most of the people, 44% answered regular and almost one third of the people said it was bad.

1.8.6-Images and letters during the route are…

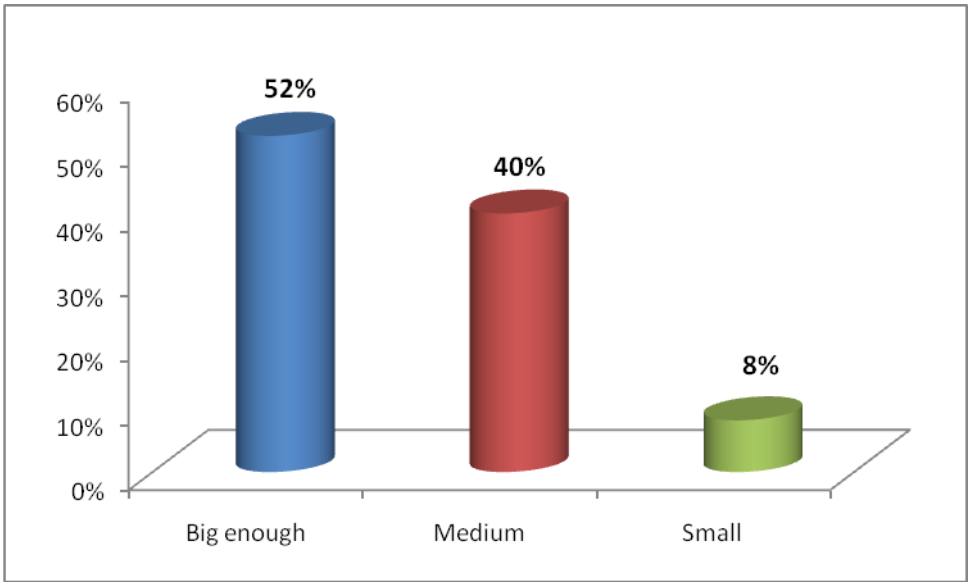

Figure 309-The planned route: Images and letters during the route are..

Concerning images and letters during the route senior's answers were also better than in the last testing method.52% considered that it is big enough, 40% found it medium sized and only 8% said that it is too small and that she or he cannot see even with glasses.

1.8.7-Speed changing between route is..

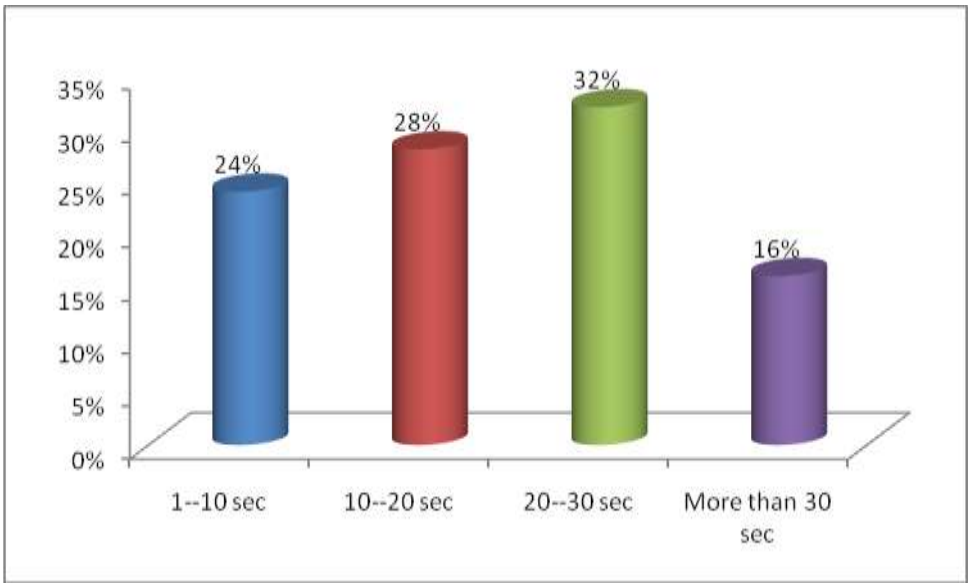

Figure 310-The planned route: Speed changing between route is..

Relating speed changing route 24% answered between 1-10 seconds and 28% between 10-20 seconds, 32% said between 20-30 sec and there were 16%. saying that it takes more than 30 sec. The not so bad result first of all related to the typing problem and the usability of the smartphone for what the seniors were not used to.

1.9-Screen

1.9.1-Brightness of screen is…

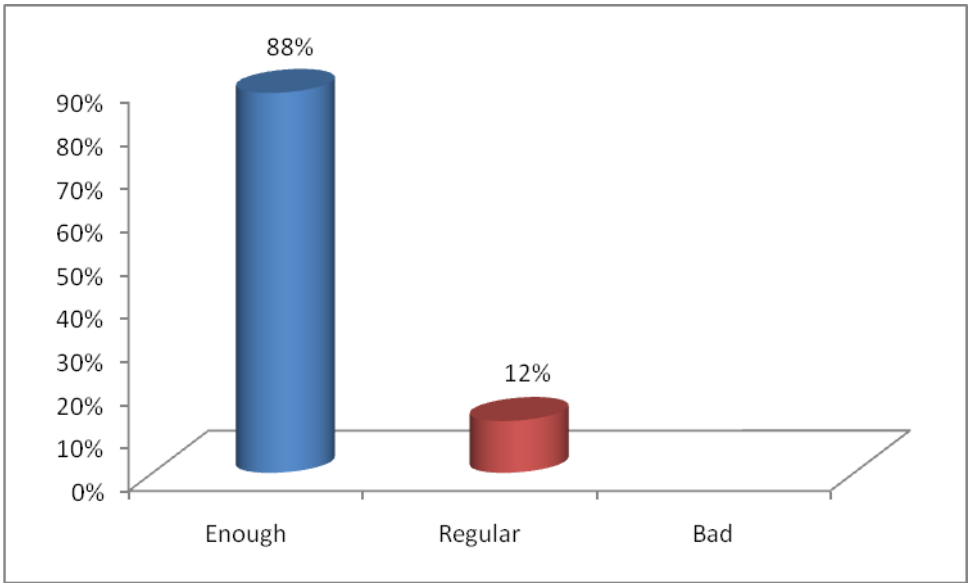

Figure 311- Screen: Brightness of screen is..

Concerning the brightness of screen 88% answered enough and 12% considered the brightness regular.

1.10-POI's

1.10.1-POI's simbology is understandable

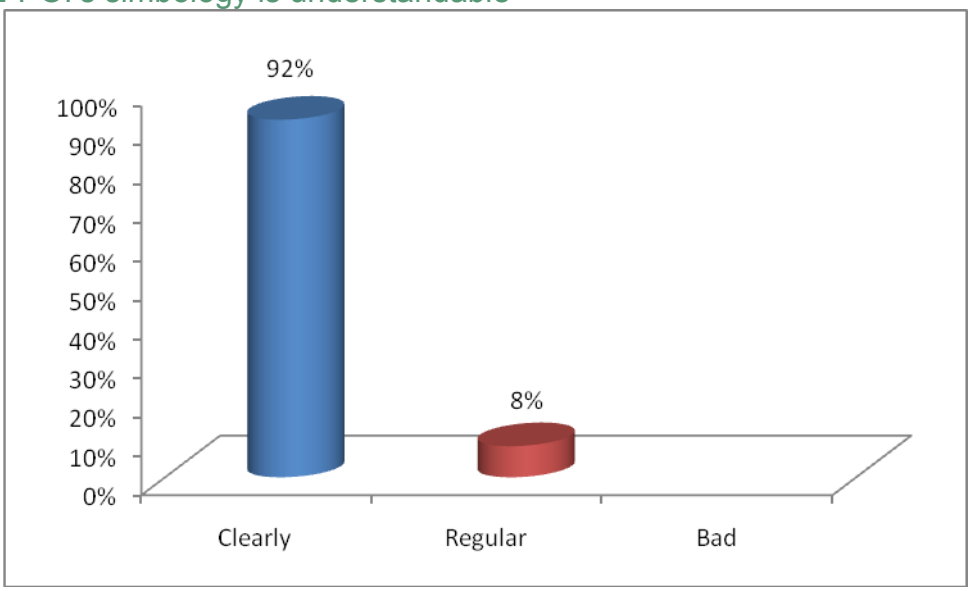

Figure 312- POI's: POI's simbology is understandable

Taking into account the improvements and the increasing of POI's availability in mobile application 92% of seniors tested considered POI's icons clearly understandable and only 8% considered their simbology regular. They were still complaining that the tram in Hungary is yellow, but they accepted that in international context it is not always yellow.

1.10.2-During your trip your profile settings and the POI's showed to you…?

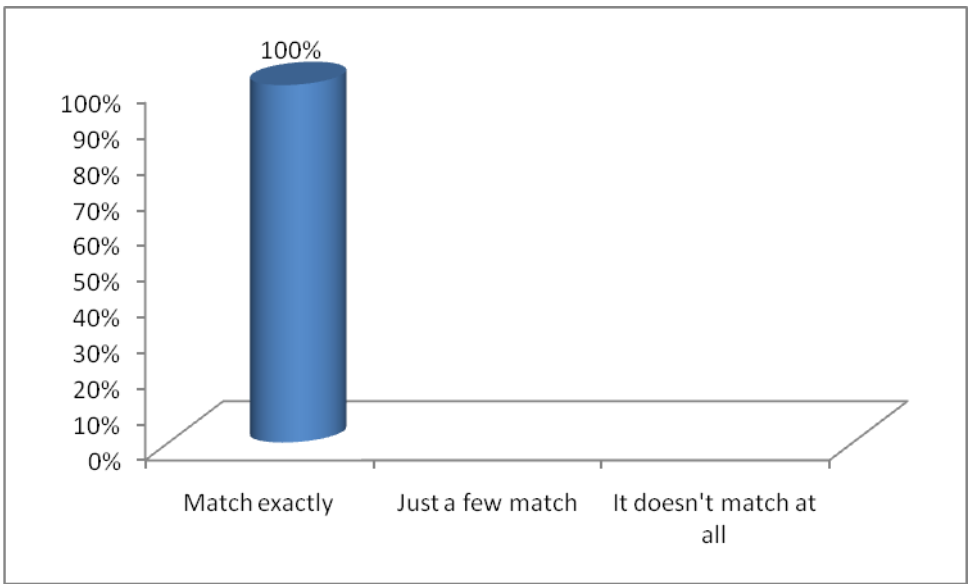

Figure 313- POI's: During your trip your profile setting and the POI's showed to you…?

Seniors said that PoIs matched all the time, so it is achieved 100%.

1.10.3-POI's showed during your trip are..?

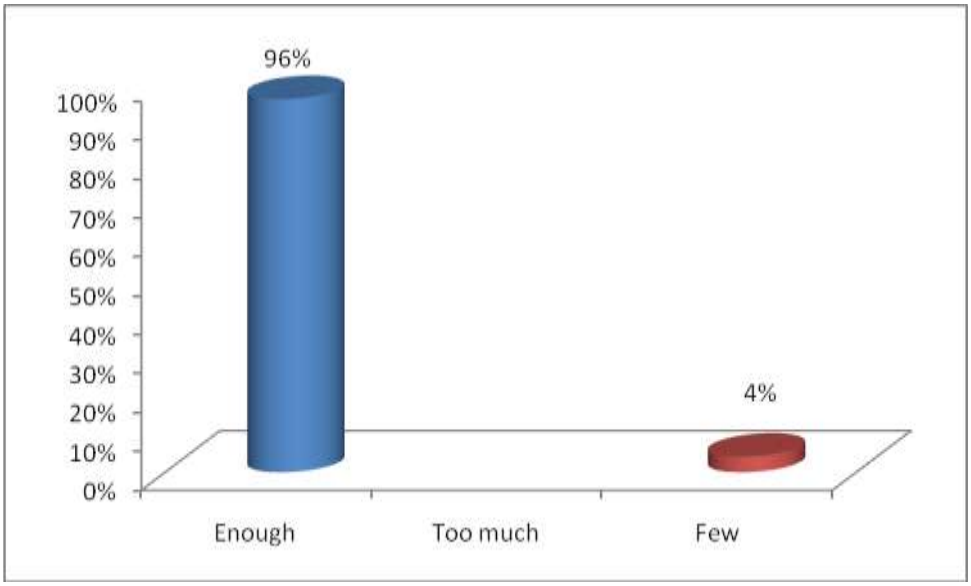

Figure 314-POI's: POI's showed your trip are..

Concerning the amount of POI's showed during the trip 96% commented they are enough and only 4% commented were few POI's available.

1.11-Routes

1.11.1-If you want to change the route to do it is…?

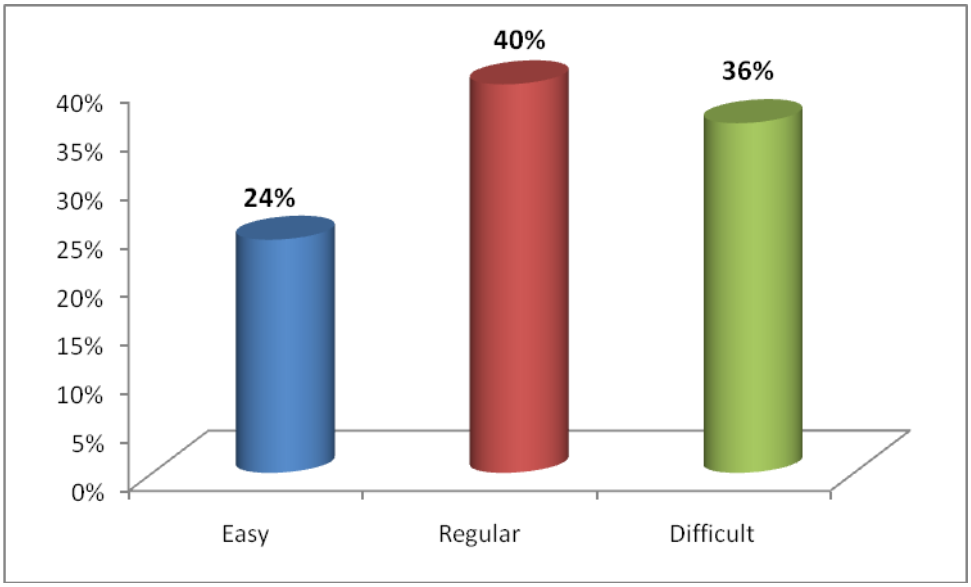

Figure 315-Routes-If you want to change the route to do it is….?

In the second mobility validation 24% considered to change the route easy, 40% considered regular and 36% said that it is difficult to do it.This results are mainly due to the unfamiliarity of the users with smartphones.

1.11.2-If you choose the wrong path, the time it takes to tell you is….?

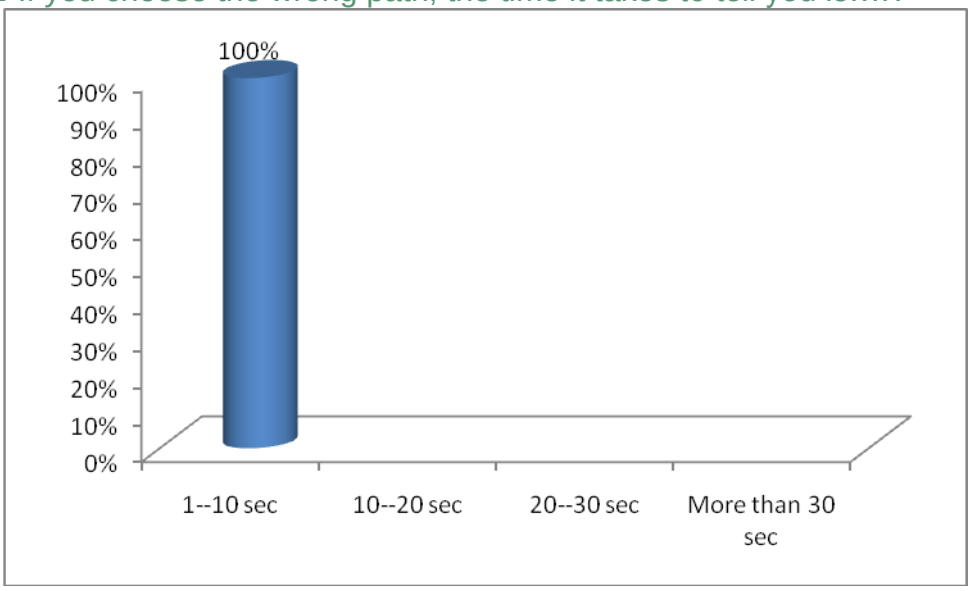

Figure 316- Routes: If you choose the wrong path, the time it takes to tell you is….?

Concerning the time to indicate a new route 100% of seniors answered between 1-10 seconds because their feeling was that even if they just turned around the app said that they are going on a wrong path.

.

1.12-Accessibility

1.12.1-In case you make use of a specific route because mobility aid…

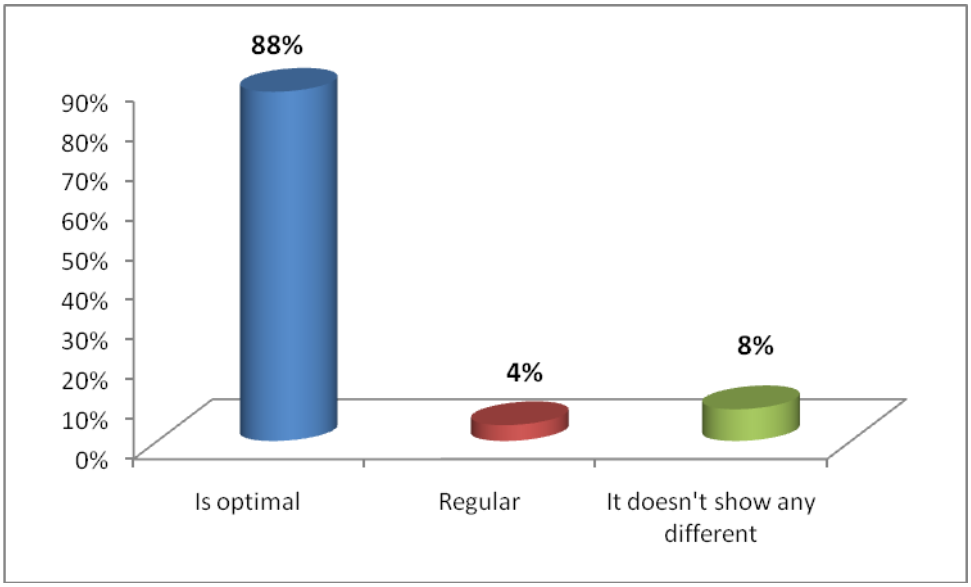

Figure 317-Accessibility.

About question related with a specific route due mobility aid 88% considered it optimal, 4% considered it regular and 8% that it doesn't show any difference.

1.13-Sugestions

- They suggested again using a different procedure in registration; they considered difficult the actual procedure taking into account they don't have or don't use any e-mail address. They suggested the registration by sms.
- They would be happy if the listened indications iwould be available in Hungarian, too..
- The would prefer to use bigger keyboard.
- Sometimes they could not see the entered address perfectly or the added address couldn't be find so easily:

Image 102- Example of problems with the added addresses

- Seniors were complaining that adding the house number or the name of the institute would be very helpful.

- Some text in the directions appears in English (like the “road direction below”): they are derived from the route directions that come from the planner, pending to be solved after project completion.

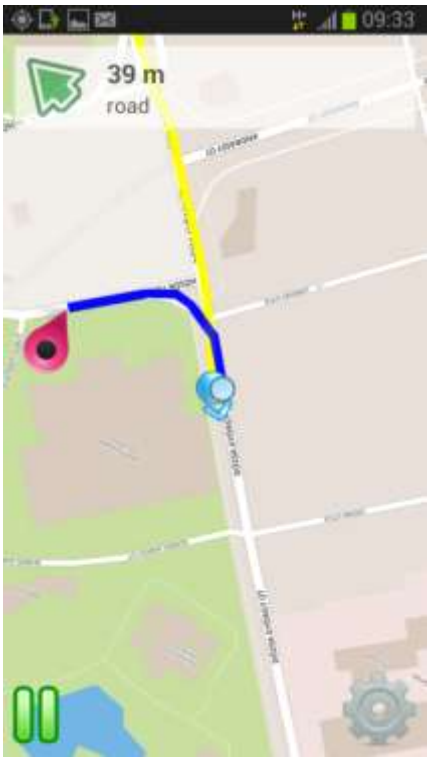

Image103- Example of indications with text in English

- Concerning showing the possible routes:

- The number (here:-1) of the used transportations were not correct
- They would prefer to see the number of the transportation (like bus7,tram 6, etc..)

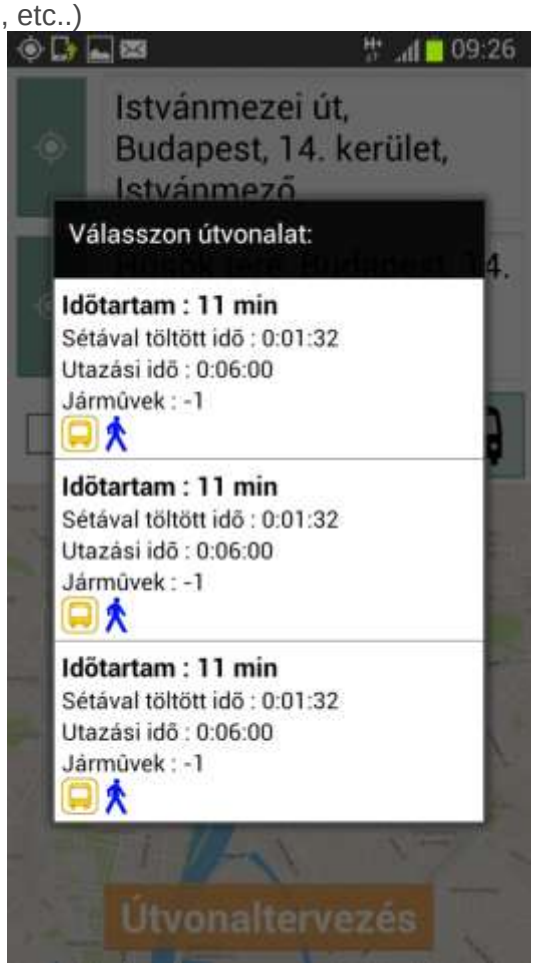

Image 104- Example of problems with number of the transports

- they would prefer that if they only walk the sign would appear only once:

Image 105- Example of problems with the signs

- they would prefer to see other different routes instead of having the same for more than 1 times, like here one route showed more than 1 times:

Image 106- Example of problems with showed route possibilities

- To improve the quality of route orientation there were verified some mistakes in few cases.

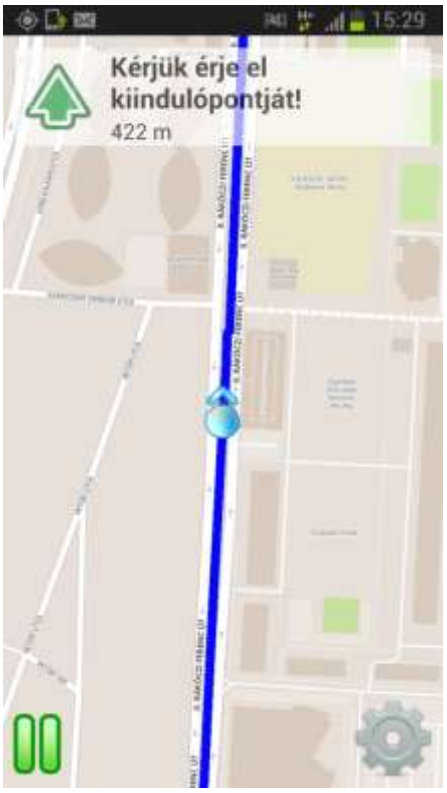

Image 107- Example of problems with route orientation

- Seniors suggested again that it will be better if the zoom on the map will be available not only when the route is planned but also when the route beginning to be able to see the name of the streets better.

Conclusions:

During the second phase of mobility tests seniors find the application more friendly user than it was before. Like in the first testing method the application for having route just by walking worked perfectly. There were sometimes only problems with route when seniors had to use more than one transports. And even if the use of the smart phone for seniors from Tökül was very hard and they needed help during the use of the application seniors found the application very useful and they liked it very much. They made conclusions and verified important further improvements like:

- They were more comfortable with bigger font size, images and icons even if the size of the keyboard was still very small for them.

- Bigger text tables to enter the destination and departure addresses would be good.

- Even if they needed help they understand now the mobile application structure and organization better than before.

- Users considered the images and icons descriptive and enough to manage mobile application and to plan a route.

- They would find more useful if they can see the number of the offered transportations before they choosing a route.

- They were happy with the improved and corrected translations comparison to the previous version. But they still had some problems with the arrows sometimes because they were not always clear for them.

- When the route is in course the number of meters till next step or destination in the above command improve significantly according the reality showed in the map.

- Most of the streets were found correctly after the improvement with adding the district to the address.

- Even if the use of the smart phone and its keyboard was sometimes hard for the elderlies they gave better results in changing of routes now mobile app.

- Seniors considered “My sites” and “My routes” functionalities very useful to plan a route, and very interesting the commands “Back” and “New route from here” as well autocomplete text function. Replanning the route from the actually position was always correct.

- They liked the available PoIs and they match with seniors profile and POI’s icons are bigger now.

- They liked the function of the application showed the place they should change with a pop up window.

- They also liked when they achieved the destination and the application showed a green tick sign for them.

Annex E -- Mobility Tests (UniGe- Switzerland)

"This project has been funded under the third AAL call, AAL-2010-3. This publication [communication] reflects the views only of the author, and the Commission cannot be held responsible for any use which may be made of the information contained therein"

PROJECT Nº: AAL-2010-3- 014

Mobility Test Results (2st Phase) Switzerland

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Classification	Public
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1. Swiss Results

The design test was held in the University of Geneva, Battelle site (route de Drize 7, 1227 Carouge, Geneva, Switzerland) and surrounding. It was organized with 6adult participants testing the mobile app "in the wild", i.e., walking around in the city along the pre-designed for them paths, where the paths were not known to them beforehand. This test was held on the 22nd July 2013. The debriefing has happened directly after the persons arrived to the designated point of arrival.

The participants have used the improved version of the mobile app (v1.9, which will be used for the second test phase), with some improvements (in comparison to the mobility tests made by the others in the first phase) and more accurate route indications than phase 1.

TRAVEL QUESTIONNAIRE	
Date	
Name	
Age	
Gender	☐ Male 66% ☐ Female 33%
Level of education	☐ No education/primary school ☐ Secondary school ☐ College (diploma) ☐ University 100%
Current employment status	☐ Free lancer ☐ Employee 100% ☐ Civil servant ☐ Labourer ☐ Housewife/-man ☐ Retired ☐ other_____
Travel date	
Travel start time	
Origin	
Destination	

Reason for travel	
Transport used	Walking 100% Bus Train Underground Tram Others….
Travel with:	Alone 84% Spouse or partner Formal/Informal caregiver Other Relatives Some friends 16% Others 2%
Turn on the application	Time to switch on 1secons-10 seconds 84% 10- 20 seconds 16% 20 – 30 seconds More than 30 seconds
Finding a departure, intermediate, destination point in the system	Finding the actual position with the button Exactly34% In the 5-10 meters16% More than 10 meters50%
	Finding the departure point by writing Exactly 66% In the 5-10 meters 33% More than 10 meters
	Finding the departure point Exactly 66% In the 5-10 meters 33% More than 10 meters%
	Finding the intermediate point Exactly In the 5-10 meters

	☐ More than 10 meters No applicable 100%
	Finding the destination point ☐ Exactly 50% ☐ In the 5-10 meters 50% ☐ More than 10 meters
	Accuracy regarding the departure, destination ☐ Exactly34% ☐ In the 5-10 meters50% ☐ More than 10 meters16%
	Speed in founding the points ☐ 1secons-10 seconds 33% ☐ 10- 20 seconds 33% ☐ 20 – 30 seconds 16% ☐ More than 30 seconds 16%
The planned route	The route planned by the app is understandable: ☐ Totally 33% ☐ Mostly 50% ☐ It could be better, like … 16%
	The offered transports were correct ☐ Totally ☐ Mostly ☐ Not at all

	The time showed for the linked transport were correct ☐ Totally ☐ Mostly ☐ Not at all
	The appeared commands during the route are…. ☐ Helpful, understandable… 50% ☐ Regular 50% ☐ Bad
	Changing between routes is ☐ Clearly 33% ☐ Regular 50% ☐ Bad 16% New route not found 0%
	Images and letters during the route are… ☐ Big enough 50% ☐ Medium 33% ☐ Small 16%
	Speed changing between routes is ☐ 1secons-10 seconds 34% ☐ 10- 20 seconds 16% ☐ 20 – 30 seconds ☐ More than 30 seconds ☐ New route not found No opinion 50%
Screen	Brightness of the screen is… ☐ Enough 83%

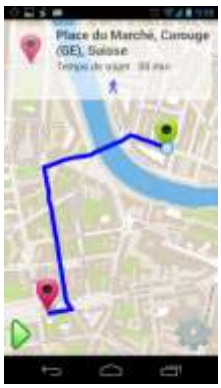
	☐ Regular 16% ☐ Bad
POI's	POI's simbology is understable…? ☐ Clearly ☐ Regular ☐ Bad No POI's available 100%
	During your trip your profile settings and the POI's showed to you…? ☐ Match exactly ☐ Just a few match It doesn't match at all
	POI's s Showed during your trip are…? ☐ Enough ☐ Too much ☐ Few
Routes	If you want to change the route to do it is….? ☐ Easy 33% ☐ Regular 33% ☐ Difficult 16% No opinion 16%
	If you choose the wrong path, the time it takes to tell you is...? ☐ 1secons-10seconds 50% ☐ 10- 20 seconds 34% ☐ 20 – 30 seconds 16% ☐ More than 30 seconds New route not found

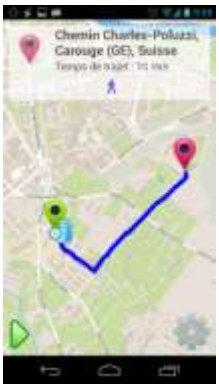
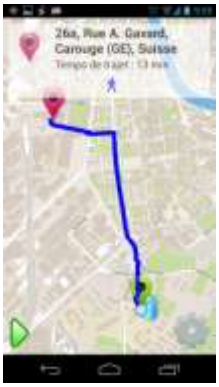
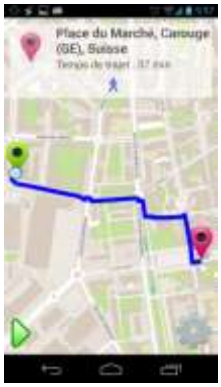
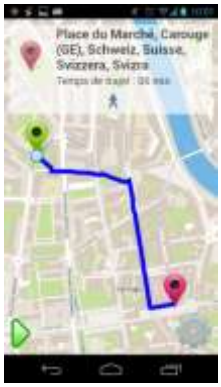
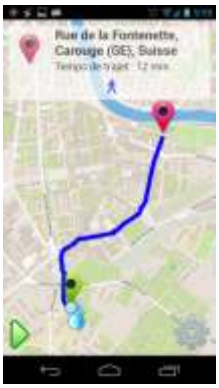
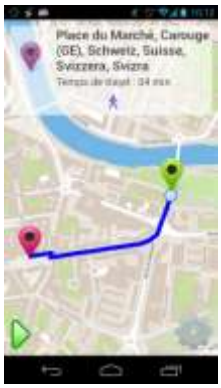
Accessibility	In case you make use of a specific route because a mobility aid ...? ☐ Is optimal ☐ Regular ☐ It doesn't show any different
Suggestions	Please feel free to share your opinion about the route planner

Table 22-Wayfis Usability Tests Results

1.1. Mobile Test

This test was conducted by 6 subjects, 2 women and 4 men, with a range of ages from 23-34 years old (average 26.5), all employed full-time at University of Geneva, Switzerland. The age of the participants was not important for this tests, as the most important was to estimate the path accuracy and accuracy of the feedback given to the user. All the participants have been walking alone (with exception to S3, walking with a friend) for around 15 minutes. The participants all have been using the same phone: Samsung Galaxy Nexus provided to them earlier by the University of Geneva. The evaluation started at 16:00 in the afternoon with an introduction about application and the random assignment of the routesto follow from point A to B (Figure 1, left side). Then the way how WayFiS application works has been shown for them and we all together went through the questionnaire, which has been filled at the end of the path (i.e., at the arrival point, B). All of the participants, after completing the route have been directed from point B to a joint meeting point (C) for a debriefing (Figure 1, right side).



 Chemin Charles-Poluzzi, Carouge (GE), Suisse	 Place du Marché, Carouge (GE), Suisse
 2bis, Rue A. Gavard, Carouge (GE), Suisse	 Place du Marché, Carouge (GE), Suisse
 Rue Jacques-Grosselin, Carouge (GE), Suisse	 Place du Marché, Carouge (GE), Schweiz, Suisse, Svizzera, Svizra
 Rue de la Fontenette, Carouge (GE), Suisse	 Place du Marché, Carouge (GE), Schweiz, Suisse, Svizzera, Svizra

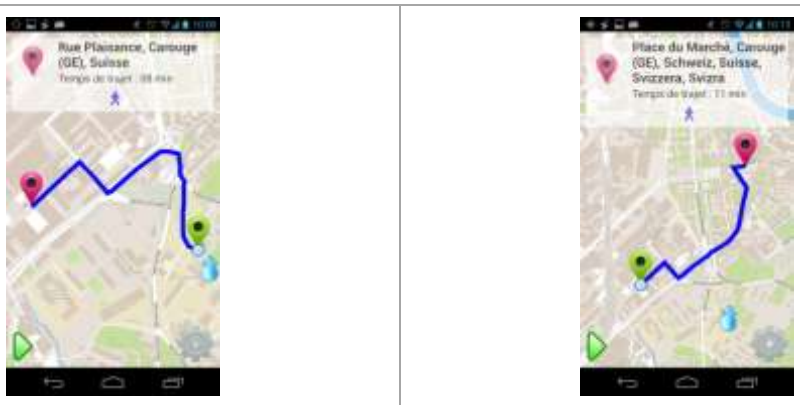


Image 19- WayFiS Mobile test (Switzerland)
S1-S6 from top to bottom, left figure: A-to-B route, right: B-to-C (the meeting point) route

The results of the Swiss tests are as follows.

1.1.1. Starting Mobile Application and Finding Points

- Time to turn on the application – always 1 to 10 seconds, with exception of participant S4 (10-20 seconds).
- Finding the actual (current) position with the button – exact for S3 and S5, 5-10 meters for S2 and more than 10 meters for others (S1, S4, S6)
- Finding the departure point by writing – exact for S2 and S5. No others tried it.
- Finding the departure point with a touch – exact for S2, S3, S6, while more than 10 meters for S1 and S5.
- Finding the destination point by a touch – exact for S1, S2, and S5, while 5 to 10 meters for S4 and S6.
- Accuracy of finding the departure/destination points was overall assessed as 'exact' by S1 and S2 and 5-10 meters by others, except of S4, who observed it to be more than 10 meters.
- Speed finding the points was below 10 seconds for S1, S2 and 10-20 seconds for S5, S6, 20 to 30 seconds by S3, and more than 30 seconds for S4.

1.1.2. Planned Route

- The route is understandable: totally (S3, S4), mostly (S1, S2, S5) and 'could be better' was suggested by S6.
- The commands appeared during the route are observed to be helpful by S1, S2 and S6, while as regular by others (S3, S4, S5).
- Changing between routes is marked clearly (S1, S3) and regular (S2, S4, S6), while assed as badly marked by S5.
- Images and letters during the routes are assessed as big enough by S2, S3, S4, medium by S1, S5, and small by S6 (wearing glasses).
- Speed changing between the routes is assessed as below 10 seconds by S4 and S6, while between 10 and 20 seconds by S5.

1.1.3. Executed Route (via Walking)

- While executing the route, the screen brightness is observed to be enough by all participants, but S5, who observed that is regular.
- The route change support by the system is easy for S2 and S6, while regular for S1, S5, and difficult for S4. S3 did not provide answer for that question.
- When choosing the wrong path, the system will inform the user: within 10 seconds (S1, S6), between 10-20 seconds (S2, S4) and within 20-30 seconds for S5.

1.1.4. Further Suggestions

The results of the tests indicate very minor suggestions from the users

- S2 and S6 additionally looked into POIs (however no path was created passing by a POI). They judge the few POIs being displayed to them as clear.
- The system is “always-ON”, meaning that the user must be connected to Internet/server via a mobile operator network. That may be a drawback, resulting in slower system in case if the user is connected to 2.5G network, instead of 3G network. That was the case for S4.
- For two participants (S4 and S6), there was an episode of displaying to them a wrong route (e.g., longer walking than needed), which has been corrected by them by asking for an alterative route
- S6 observed that his/her movements were followed by the system inaccurately for a short moment, during the followed path. At some point the system auto-corrected. Possibly that inaccuracy in estimation of the current location of the participant was related to low visibility of GPS in the place.

1.2. Swiss Conclusions

- The test was executed successfully by all the participants.

- It was easy for them to use the touch screen because they use it daily. They clicked on the point they wished and they were not afraid of make a mistake in the app, feeling it is a part of app testing for a user input.

- The size of the fonts is big enough for all the participants, except for the person wearing glasses. The brightness is acceptable too, and the participants knew how they could change the settings.

- Participants realized that one couldn’t zoom the screen, to make the fonts bigger just the map could be zoomed.

- The accuracy of the point of departure/destination varied, but was always within the expected error – around 10 meters and was considered by the participants as good. The exact point was very much appreciated as found

by touching the screen or writing the exact address. Overall, the accuracy of points was acceptable for all the participants.

- The speed of finding the points and changes was not always in real-time, but was within the expected expectation margin – in many cases around 10 seconds, but even if it was around 30 seconds, the participant accepted it, as he was on slow network, i.e. he/she adjusted his/her expectationsbased on the technical knowledge about the networks. So overall the speed was acceptable for all the participants.

- The participants agree that the routes at least mostly understandable by them, and mostly find the commands being helpful along the path.

- The participants agree that it is not completely intuitiveto change the routes.

- Generally all the participants could see the potential of the application, especially during longer trips, when walking in unknown cities.

Annex F -- Mobility Tests (Hi-Iberia Madrid)

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PROJECT Nº: AAL-2010-3- 014

Mobility Test Results (2st Phase)
Madrid, Spain

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1. Madrid Results

The mobility tests have been held in Madrid municipality and were organized with 4 adult participants testing the mobile app walking around in the city along the pre-designed for them paths, where the paths were not known to them beforehand.

The tests have been held between the 31st of July and the 1st of August 2013. The participants were given the test questionnaire sheets to be completed after they finished the route.

The participants have used the improved version of the mobile app (v1.9, which will be used for the second test phase), with some improvements (in comparison to the mobility tests made by CETIEX, SMIMO and UNIGE in the first phase) like more accurate route indications and improvements of localization/positioning modules.

1.1. Mobile Test

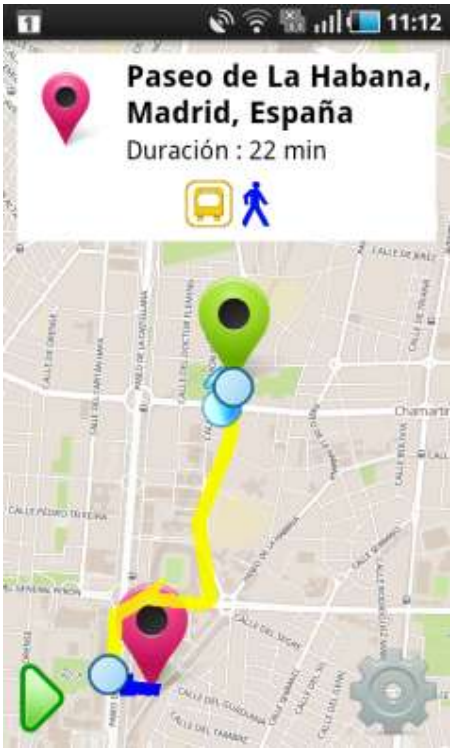
This test was conducted by 4 subjects, all women, with a range of ages from 35-50 years old, all employed full-time at HIB in Madrid, Spain. The most important was to estimate the path accuracy and the navigation guidelines performance walking and using public transportation. In fact, the tests have been conducted within Madrid municipality thanks to the usage of EMT transit data, data on transit times available for the municipal transportation company (http://www.emtmadrid.es), that the company agreed to share to be used within the project scope.

The travels have been 4 (one for each user):

- Going to the market, path of around 1 km, 10 minutes walking.

- Going to the shopping center, path of 5 km, 45 minutes using public transportation.

- Going to solve administrative documentation, 1,5 km, 22 minutes walking and using bus.



- Going to the hospital, 32 minutes walking and using public transport.

The participants all have used the same device: Samsung Galaxy S provided to them earlier by HIB together with the travel questionnaire.

As the tests were planned to take place the 31st of July and 1st of August 2013, the 30th of July in HIB office, the employees were given a brief explanation of the way the application works and the content of the questionnaire.

The results of the Madrid tests are as follows.

TRAVEL QUESTIONNAIRE	
Date	
Name	
Age	
Gender	☐ Male 0% ☐ Female 100%
Level of education	☐ No education/primary school ☐ Secondary school ☐ College (diploma) ☐ University 100%

Current employment status	☐ Free lancer ☐ Employee 100% ☐ Civil servant ☐ Labourer ☐ Housewife/-man ☐ Retired ☐ other_____
Travel date	
Travel start time	
Origin	
Destination	
Reason for travel	
Transport used	☐ Walking 100% ☐ Bus 75% ☐ Train ☐ Underground ☐ Tram ☐ Others….
Travel with:	☐Alone 100% ☐ Other Relatives ☐Spouse or partner ☐ Some friends ☐ Formal/Informal caregiver ☐ Others
Turn on the application	Time to switch on ☐ 1secons-10 seconds 75% ☐ 10- 20 seconds 25% ☐ 20 – 30 seconds ☐ More than 30 seconds
Finding a departure, intermediate, destination point in the system	Finding the actual position with the button ☐ Exactly ☐ In the 5-10 meters 75% ☐ More than 10 meters 25% Finding the departure point by writing ☐ Exactly 25% ☐ In the 5-10 meters 25%

	☐ More than 10 meters 50%
	Finding the departure point ☐ Exactly 25% ☐ In the 5-10 meters 25% ☐ More than 10 meters 50%
	Finding the intermediate point ☐ Exactly 25% ☐ In the 5-10 meters 25% ☐ More than 10 meters 50%
	Finding the destination point ☐ Exactly 25% ☐ In the 5-10 meters 25% ☐ More than 10 meters 50%
	Accuracy regarding the departure, destination ☐ Exactly ☐ In the 5-10 meters 25% ☐ More than 10 meters 75%
	Speed in founding the points ☐ 1secons-10 seconds 25% ☐ 10- 20 seconds 75% ☐ 20 – 30 seconds ☐ More than 30 seconds

The planned route	The route planned by the app is understandable: ☐ Totally 75% ☐ Mostly 25% ☐ It could be better, like …..
	The offered transports were correct ☐ Totally 100% ☐ Mostly ☐ Not at all
	The time showed for the linked transport were correct ☐ Totally 33% ☐ Mostly 66% ☐ Not at all
	The appeared commands during the route are…. ☐ Helpful, understandable… 100% ☐ Regular ☐ Bad
	Changing between routes is ☐ Clearly 75% ☐ Regular 25% Bad
	Images and letters during the route are… ☐ Big enough 100% ☐ Medium ☐ Small
	Speed changing between routes is ☐ 1secons-10 seconds 75%

	☐ 10- 20 seconds 25% ☐ 20 – 30 seconds ☐ More than 30 seconds
Screen	Brightness of the screen is… ☐ Enough 100% ☐ Regular ☐ Bad
POI's	POI's simbology is understable…? ☐ Clearly 100% ☐ Regular ☐ Bad
	During your trip your profile settings and the POI's showed to you…? ☐ Match exactly 100% ☐ Just a few match It doesn't match at all
	POI's s Showed during your trip are…? ☐ Enough 100% ☐ Too much ☐ Few
Routes	If you want to change the route to do it is….? ☐ Easy 75% ☐ Regular 25% ☐ Difficult

	If you choose the wrong path, the time it takes to tell you is...? ☐ 1secons-10seconds 75% ☐ 10- 20 seconds 25% ☐ 20 – 30 seconds ☐ More than 30 seconds
Accessibility	In case you make use of a specific route because a mobility aid ...? ☐ Is optimal N.A. ☐ Regular It doesn't show any different
Suggestions	Please feel free to share your opinion about the route planner

1.1.1. Starting Mobile Application and Finding Points

- Time to turn on the application – S1, S2 and S4 1 to 10 seconds; S2 10 to 20 seconds;
- Finding the actual (current) position with the button – S2 said more than 10 meters.
  S1, S3 and S4 said in the 5-10 meters

  The office in Juan Hurtado de Mendoza, was placed in Calle de Padre Damian.

Figure 318 Inserting departure point by current location button.

Comment of S1: It has been noted that when the user presses the current location, the location that is retrieved is inserted in the field but also others address appear at the same time as if we were texting the position and the auto-complete function is activated. Maybe, when the user position is retrieved the address should be directly fixed there.

Figure 319 Inserting departure point by touch button.

S2 More than 10 meters

The departure was in Henri Dunant street but it was placed in Calle de Padre Damian.

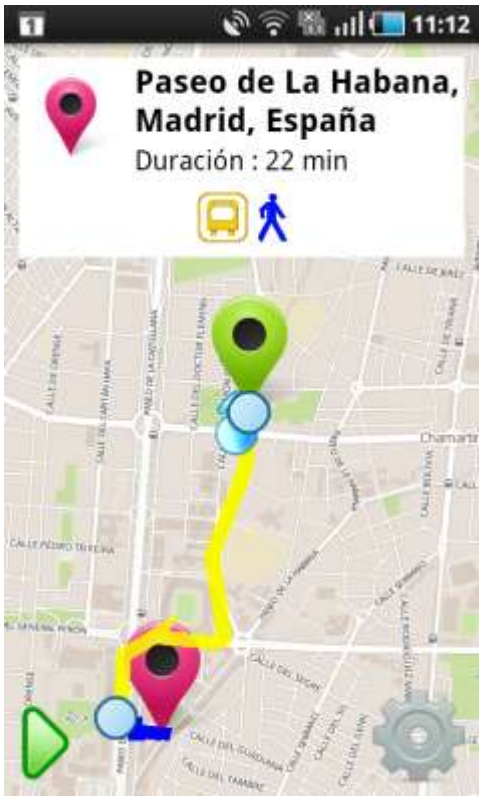


Figure 320 Inserting departure point by current location button.

Comment of S3: It takes some time to load the map and the route as the application said there is an error with the connection, even though the mobile says we have 3G connection.

S4 suggested inserting the departure/arrival times also to differentiate among different itineraries.

1.1.2. Planned Route

- The route is understandable: totally by S1; mostly by S2 and totally by S3 and S4.
- Offered transports were correct for all the users.
- The time showed for the linked transport were correct for S2 and S3, mostly correct for S4 (S1 no public transport included):
  Comment by S1: starting time is missing when displaying route directions with public transport, as it can be seen from the figure below:

Figure 321 Route Directions

- The commands appeared during the route are observed to be helpful by all the users.

- Changing between routes is marked clearly by S1, S2 and S4, regular by S3.

- Images and letters during the routes are assessed as big enough by all the users.

- Speed changing between the routes is assessed as below 10 seconds by S1 S3 and S4, from 10 to 20 seconds for S2.

1.1.3. Executed Route (via Walking)

- While executing the route, the screen brightness is observed to be enough by all the users.
- The route change support by the system is easy for S1, S2 and S4, S3 marked it regular.

- When choosing the wrong path, the system will inform the user: within 10 seconds S1 S3 and S4, from 10 to 20 seconds for S2.

Comments fromS1: some time the localization of user position is not very accurate (10-15 meters of distance) so the system detects that the user is in the wrong path and continuously alerts him to go back to the correct path, even if the user is actually in the correct road. See figure below.

Figure 322 Wrong path detected

In the figure above, the user was actually following the indicated path.

1.1.4. Executed Route (via Public Transport)

When executing the routes including public transportation (S2, S3 and S4), two users (S3 and S4) have encountered some problems in the navigation procedure as, due to some problems with the localization module, the application was not able to recognize that the user was close to the bus stop. It took several trails, at least 3 or 4 for the application to detect that the user was close to the bus stop so that the user could indicate that “I’m in” the bus.

Once this problems was solved, the users could follow the path through the app interface and when the user had to jump off the bus, the app indicated with voice commands,

The overall reception of the navigation with public transport mode is quite positive and all the users indicated that the alert functionality is very useful and agree that, once the problems of precision and accuracy of the localization and positioning modules are corrected, the potentiality of the service are very positive.

1.1.5. Further Suggestions

The results of the tests indicate the following suggestions from the users

- S4 additionally looked into POIs and judged the POIs being displayed to them as clear.

- The system is “always-ON”, meaning that the user must be connected to Internet/server via a mobile operator network. That may be a drawback, resulting in slower system in case if the user is connected to 2.5G network, instead of 3G network. However, for the travel of S1 (20 minutes) that was not a problem.

- S3 encountered that sometimes the accuracy of the positioning was not very high, so the system was always alerting of wrong path. As it is possible that the inaccuracy in estimation of the current location of the participant can be related to low visibility of GPS in the place, we suggest increasing the tolerance for detecting wrong paths of at least 20-30 meters.

- The participants agree that when selecting the points using “current location” button or the touch functionality, the selected point could be directly positioned, without opening the auto-complete window.

- When displaying walking routes sometimes consecutive walking paths appear as a list of transfers.

1.2. Madrid Conclusions

- The test was executed successfully by all the participants.

- It was easy for them to use the touch screen because they use it daily

- The size of the fonts is big enough for all the participants.

- The brightness is acceptable too, and most of the participants knew how they could change the settings; the one that did not mention this fact, had it already configured as maximum brightness.

- The speed of finding the points and changes was not always in real-time, but was within the expected expectation margin.

- The participants agree that the routes at least mostly understandable by them, and mostly find the commands being helpful along the path.

- The users agreed that once the problems of precision and accuracy of the localization and positioning modules are corrected, the potentiality of the service is very positive.

- Generally all the participants could see the potential of the application, especially during longer trips, when walking in unknown cities. Also because of the route planning related the public transport and waiting times and transfers, as in a big city like Madrid is impossible to know all the lines and stops.

5. Conclusions

This section includes the summary of the conclusions of all the tests done during the trial phases, especially during the second phase of the tests, whit the second prototype improved. The detailed conclusions regarding each test, in each country, are explained in the annexes in each questionnaire, for details regarding the improvements planned for the phase after project completion, please see in D24 – Future improvements report.

The main issue raised while performing the tests, was the fact that users were not familiar with the use of Smartphones or ICT technologies, so WayFiS interfaces need to be even more intuitive and usable. After the second trials phase it was noticed that the seniors were more familiar with it, so after a period of familiarization with Smartphone usage it is expected that users can fully benefit from the solution even if it's the first experience with this technology.

The conclusions are presented considering first the WayFiS Web Portal and then the ones related to the mobile application are presented.

5.2. WayFiS Web Portal

In the first phase the design and usability of the WayFiS web portal was tested. For the second phase, only the design improvements were tested analyzing if the WayFiS web portal fulfills the expectations. The final results after testing the improvements performed are the following

5.2.1. Design conclusions

- They considered the information is organized and understandable
- Seniors understood perfectly the meaning of images, buttons and icons. They considered the sites well-structured and correct and understandable page titles.
- Seniors testers understood the meaning of buttons in WayFiS although they would like to have more help which would be useful and helpful for them.
- They liked the color of the app very much.
- They considered the auto complete feature very useful in order to include a new address in the departure, destination or intermediary point.
- They also considered easy to view a recently route, and see the route, icons and images in the map.

In spite the senior's difficulties in terms of eyesight and with ICT skills they agreed WayFiS web portal has improved significantly, from the first phase to the second one, in terms of look & feel according their needs (colors, font size, etc). They commented they like the improvements included like adding some indications or buttons' rename for better understanding.

5.2.2. Usability Conclusions

Regarding the usability of WayFiS web portal, the main objective is to reduce errors committed by users when using the application and carry on the desired task more efficiently and effectively, increasing their satisfaction and improving their overall experience with the application. With this goal in mind the conclusions obtained were:

- They commented it is quick to enter in the web application (easy & quick process).
- Seniors considered very useful the “change departure-destination button”
- They found the intermediate point very useful.
- They considered very interesting the user profile and easy to manage it.

They still gave some suggestions to make it even clearer like bigger font styles, bigger maps, etc.

5.3. Mobile Conclusions

In the second phase of validation, senior testers found WayFiS mobile application improved significantly in comparison with previous validation. Now its friendlier to use and adapted to their needs. Seniors feel more comfortable using it and verified important improvements. Anyway they still provide suggestions and possible improvements based on their needs for a future application (“wishes list”)

The conclusions showed here are divided in the main features obtained.

5.3.1. Service Accuracy

- When the route is in course the number of meters till next step or destination, showed in the above command text, has improved significantly according the reality showed in the map.
- Most of the streets were found correctly after the improvement of adding the district to the address.
- The indications and arrows in above command works properly according to the map indications.
- When in navigation mode, the number of meters till next step or destination in the above command, has improved the accuracy
- Better results in the modification/recalculation of routes; now mobile app recalculates perfectly the new routes.
- The accuracy of the point of departure/destination varied, but was always within the expected error – around 10 meters and was considered by the participants as good.

- End users really appreciated how easy were to touch the screen and select the place, instead to writing the exact address.
-
- Accuracy of points was acceptable for all the participants.

Suggestions

- They would be happy if they could add the house number in the application.
- They would find more useful if they can see the number of the offered transportations before choosing a route.

5.3.2. Service Functionalities

- They understood now better the mobile application structure and organization as well as the concepts of buttons and areas, but still they had some problems with some buttons functionalities and they would prefer more help on the mobile app.
- They liked the color of the app very much.
- Seniors considered “My sites” and “My routes” functionalities very useful to plan a route, and very interesting the commands “Back” and “New route from here” as well as the autocomplete text function.
- They considered very useful the functionalities “My Routes” and “My Sites”, and they liked the PoIs also very much.
- The available POI’s match with senior’s profile.
- They also liked when they achieved the destination and the application showed a green tick sign for them.
- They considered the auto complete feature very useful in order to include a new address in departure, destination or intermediary point.
- The participants agree that the routes are mostly understandable by them, and most of them find the commands helpful along the path.

5.3.3. Significant Improvements

- The voice command functioning has improved considerably.
- Most of the streets were found correctly after the improvement of the addition of the district to the address.
- Better visibility relating with brightness of the screen.
- The available POI’s match with seniors profile, there are showed the ones needed for their requirements.
- POI’s icons are bigger now.

- Even if they needed help they understand now the mobile application structure and organization better than before.

- They were happy with the improvements and also considered the language corrected translated in comparison to the previous version.

OVERALL CONCLUSION

Our results show that users are generally happy about WayFiS and they are considerable differences in experience between novice and Smartphone-expert users, with the latter ones outperforming the novice users. Overall "look and feel" was well perceived and comforted both the novice and expert users, to the point that sometimes we have observed that the novice users tried to 'click' the application icons without a fear; feeling like experts. That is a good feedback that the application encouraged the users to interact with it, instead of putting him/her in a role of a simple receiver of information and instructions.

While most users completed the tasks given to them, they still have encountered challenges, as indicated in the summary sections above: for the web-based interface and for the mobile interface. The users agreed that once the challenges with accuracy of the localization and positioning modules are corrected, there is a high user potential for WayFiS, especially during longer trips, when roaming in unknown cities, even more if under time pressure to reach some particular destination at a given time, e.g., reach the hospital side for a scheduled appointment. Given accurate route planning related the public transport and waiting times and transfers, WayFiS has been especially appreciated in a big city like Madrid, where it is virtually impossible to know all the lines and stops, even for city residents.

We confirm the previous research findings that the users become more critical to the application, the more critical is task at hand they are handling[1], e.g., web-based services are somehow perceived less critically than mobile app for walking, which is, in turn, less critical than mobile app experienced when taking public transportation (which would not wait until app loads its instructions). Our developments shall focus on the WayFiS application usage context being different criticality states of the action to the user, and adapt the application delivery to it, and that in order to satisfy the user's need for information and keep him/her calm and comforted that the destination will be reached in time. That applies to interfaces, handling occasional inaccuracy of location and handling lack of network connectivity, sometimes experienced by the user's devices.

Furthermore, given the WayFiS results so far, we hypothesize that, one the application will be able to satisfy user's needs and expectations in different application usage context, we may influence positively user's perception of self-efficacy[2] and hence even more encourage him/her to use our application and become mobile in unknown places. As literature shows, increasing the person's self-efficacy in one domain positively

[1] D. J. Kim and Y. Hwang, "A study of mobile internet user's service quality perceptions from a user's utilitarian and hedonic value tendency perspectives," Inf. Syst. Front., vol. 14, no. 2, pp. 409–421, Sep. 2010.

[2] self-efficacy is "own judgment of own capabilities to execute given levels of performance" by A. Bandura, "Recycling misconceptions of perceived self-efficacy", Cognitive Therapy and Research, June 1984, Volume 8, Issue 3, pp 231-255.

influences his/her self-perception and self-efficacy in other domains like social interactions and health, and in turn overall person's quality of life (QoL). Our ultimate goal is that WayFiS contributes to the QoL of an individual, and by affecting many potential individuals, to the welfare of the society.

