

Name : Avinash Subramanian

Assignment : HCI Usability Testing Evaluation Report
(Evaluation Assignment - 6)

Course : CS5760 HCI Usability Testing

Team : ROYA COFFEE APPLICATION

Team Members : Brad Johns, Gregory Johnson, Kirsti Wall,
Robin McNally, William Doyle, Taylor

I. INTRODUCTION:

The Roya Coffee application is basically designed to be used by farmers working in the Mexican coffee farms in order to report any infection found in coffee leaves. The Roya virus is wide spreading in the Mexican coffee farms and the scientists want to collect statistical data with proof of the infected coffee leaves, their timeline, severity and the course of development the infection undergoes, so that they can conduct efficient research on improving ways and means of fighting the viral infection. So it is clear that the users of this application would majorly be farmers working in the coffee farms. There is a high chance that the users might not be fluent in using smartphones and it is very careful to make the design as simple as possible.

Basis for testing :

Based on the introduction provided for the application, it was important to realise what we need to keep in mind while testing the application. Simplicity of design, ease of usage, clarity of information and speed were the main aspects which formed the basis of consideration in designing my Usability Tests for this application.

Participants for the the Usability Testing:

The participants who signed up for the usability testing were all undergraduate students who are of the age between 20 and 25, also they had ample experiences in usage of smartphones and were well versed with applications and its designs. To tackle this difference from the real possible scenario that could exist when the application was implemented in coffee farms, I made a conscious effort in letting the participants know about the actual users potential of the application and got them to the mood that they would perform the testing keeping the actual users in mind. This I thought would fetch better results and more relevant results to the application.

Test goals :

I wanted to achieve the following at the end of the entire testing process:

- Was the application simple enough in its interface ?
- Are there any bugs in the general process flow of the application ?
- Get multiple comments from the users on improving the interface of the application
- General comfortableness of the user while using the application

II. INITIAL TEST PLANS:

TEST SCENARIO 1:

1. **Test Scenario Name** : Select north location and select 5 leaves as infected

2. **Test Goals for the scenario**

Make the user to select north location and after the leaves page loads, make them select 5 leaves as infected - two in the top row, two in the middle row and one in the last row.

3. **Quantitative measurement list**

- a. Time taken to find north position and enter the leaf selection page
- b. Time taken to select 5 leaves as infected
- c. Time taken to save the selected data and return to the previous page
- d. How many times the user clicks a leaf more than once without waiting the time taken for the selection appears
- e. Overall time taken for the entire scenario

4. **Scenario description**

Assume that you find an infected plant in the north region of where you are currently standing. And you find two leaves in the top row, two leaves in the middle row and one leaf in the last row as infected. Use the app to select the north region and select the leaves that are infected from right positions as given in the description

5. **Task list**

- a. Select north region
- b. Selected two infected leaves in the top row
- c. Select two infected leaves from the middle row
- d. Select two infected leaves from the last row
- e. Click save to return to the previous step

6. Qualitative measurement list

- a. How is the user face expressions while looking to select 5 leaves from different rows ?
- b. Does the user make any comments about the process ?
- c. Does the user feel any lag while selecting the leaves ?
- d. User's reactions of understanding the scenario

7. Potential observations of participant

- a. Does the user clearly understand the working of the application ?
- b. Does user have any suggestions to the application in general ?
- c. Does the user understand the instructions to select the infected leaves ?
- d. Does the user get irritated at any point of the process ?

8. **Bug Report Form** : Template is attached to the bottom of the page

9. Post Scenario interview or questionnaire questions

- a. What does the user think about the interface while selecting the infected leaves ?
- b. Does the user have any comments about the scenario ?

10. **Test set-up details** : The test will be conducted in an environment where enough lighting is available and the user can clearly see all the leaves.

TEST SCENARIO 2:

1. **Test Scenario Name** : Identifying the infected leaves

2. Test Goals for the scenario

Make the user understand the level of infected leaves by reading the about section first and show them a set of similar leaf images and to estimate the level of understanding given by the about section description. This scenario would give a clear picture of whether the information provided is sufficient to identify the infected coffee leaves. Since

the application will be deployed to be used by farmers, it is vital that the level of infection is noted clearly enough

3. Quantitative measurement list

- a. Time taken by the user to read through the about section
- b. Number of times user has to scroll up or down
- c. Number of leaves identifies correctly by the user matching the level of infection
- d. Number of leaves incorrectly identified by the user
- e. Average Time taken by the user to identify the level of an infected leaf

4. Scenario description

Click the About button and read through the information provided in the section. Carefully examine the images of the infected leaves and the levels of infections. After this you will be asked to identify certain leaves which are infected and you need to mention the levels of infection of each such leaf.

5. Task list

- a. Make the user click the about section
- b. Make the user read the about section completely
- c. Provide a list of images of infected coffee leaves which are infected at different levels
- d. Make the user select the level of infection for each such leaf

6. Qualitative measurement list

- a. Is the user clear enough with the description given for infected leaves ?
- b. How easily the user identifies the infected leaves
- c. User's face expressions while selecting the levels of infected leaves
- d. Does the user get confused at any point doing the test scenario ?

7. Potential observations of participant

- a. Does the user feel enough information has been provided to clearly understand the different levels of infection in coffee leaves ?
- b. General comment on the about section and how it can be improved to be more clear

8. Bug Report Form : The bugs will be collected from the bug report form

9. Post Scenario interview or questionnaire questions

- a. Was the user stressed at any point while identifying the levels of infection in the sample leaves ?
- b. Were right colors used to depict different levels of infection ?

TEST SCENARIO 3:

1. Test Scenario Name : View past submissions

2. Test Goals for the scenario

To ensure that the users can comfortably view their past submissions from the submissions section, this scenario has been designed. This will mainly help the user to note down and refer to what all leaves they have previously identified and makes sure that they do not repeat the same infected leaves.

3. Quantitative measurement list

- a. Time taken by the user to view a submission made before 5 days. (Assume on an average a user makes 2 submissions every day)
- b. Number of times the user clicks on the wrong submission by mistake and click the back button
- c. Time taken for the submission to load. Is it negligible ?

4. Scenario description

Assume that a typical user will provide 2 submissions a day and it is done on an everyday basis. We have created some sample submissions already you will need to view the submission that was made before 5 days. Find the last submission which was made on the following date : _____. Identify the location and the level of risk of the infection of the coffee leaves

5. Task list

- a. Click submissions button
- b. Scroll down to find the submission made on the given date
- c. Make the user identify the location of the submission
- d. Make the user identify the level of risk of the infected leaves submission made

6. Qualitative measurement list

- a. Note the facial expressions of the user while searching for the required submission
- b. How easy is it to scroll down the list of submissions for the user ?
- c. Does the user get confused at any point of the scenario process ?

7. Potential observations of participant

- a. Get general comments from the user about the submissions section
- b. Any difficulties in viewing the past submissions
- c. Suggestions to get more clarity on finding submissions

8. Bug Report Form : will be attached at the bottom

9. Post Scenario interview or questionnaire questions

- a. How easy was it to scroll down to the past submissions ?
- b. Were you finding it difficult to reach the required submission ?

TEST SCENARIO 4

1. Test Scenario Name : get location latitude and longitude from the application (if the implementation is complete by then)

2. Test Goals for the scenario

The main goal of this test scenario is to verify the retrieval of location coordinates from the application's get location button and to check for the speed and correctness of the retrieved data.

3. Quantitative measurement list

- a. Time taken to retrieve latitude and longitude location after clicking the get location button
- b. Exact coordinate value of the location obtained

4. Scenario description

- a. Click a new submission and use the get location button to get the location of the current spot you are located

5. Task list

- a. Click new submission
- b. Click get location button
- c. Wait until the latitude and longitude is detected

6. Qualitative measurement list

- a. Is the location taking too long to be retrieved ?
- b. Approximation of the coordinates - is it correct ?
- c. Facial expression of the user while waiting for the location to be retrieved.

7. Potential observations of participant

- a. User comments on retrieving location as latitude and longitude
- b. General comments on improving the interface of getting the location

8. Bug Report Form : attached at the bottom of the document

9. Post Scenario interview or questionnaire questions :

a. Did you have to wait for too long to get the location from the application ?

10. Test set up details - to be conducted at a place which is not underground or in a place where location is difficult to be determined.

TEST SCENARIO 5:

1. Test Scenario Name : Overall Flow test

2. Test Goals for the scenario

To make the user go through the entire submission process and get their reviews on the interface, working and the flow of the process. In the process, detect any possible bugs user may encounter

3. Quantitative measurement list

a. Time taken by the user to complete the entire test

b. Number of errors detected by the user

c. Number of time the user clicks submit before completing the entire process

4. Scenario description

Make a new submission from the beginning, select the location by typing in and select as many leaves as infected as you want from the different directions. Upload sample images of the leaves for top middle and bottom rows. Finish the submission process by clicking the Save button. Repeat the process again if you make any errors.

5. Task list

a. Make the user click New submission button

b. Make the user to enter location

- c. As the user to complete the entire submission process by selecting infected leaves in all directions found
- d. Make the user to click the Save button to complete the submission process

6. Qualitative measurement list

- a. Is the user clear enough with the description given for the test scenario ?
- b. How easily the user completes the submission process ?
- c. Is the user able to complete the process without any assistance ?

7. Potential observations of participant

- a. Any bugs found by the user
- b. Comments of the user on the process flow
- c. Comments on improving the interface

8. Bug Report Form : The bugs will be collected from the bug report form

9. Post Scenario interview or questionnaire questions

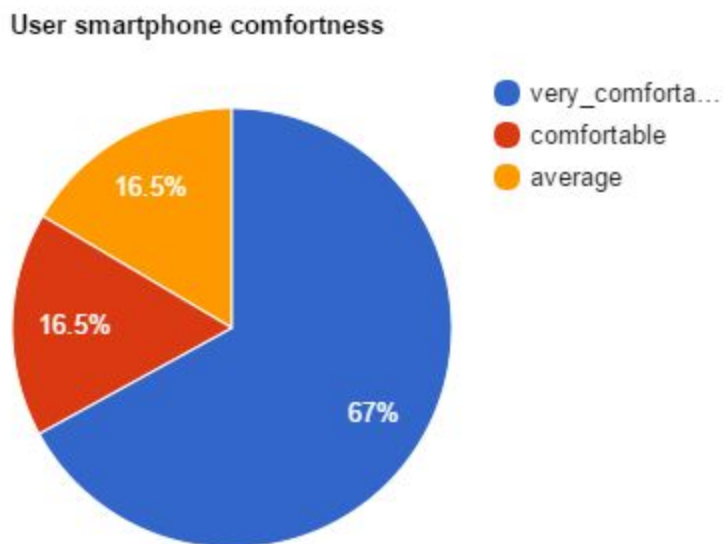
- a. Were you stuck at any point before submission ?
- b. What would you like to change in the submission process ?

III. RESULTS:

Pre Interview questionnaire

1. How comfortable are you with using smartphones ?

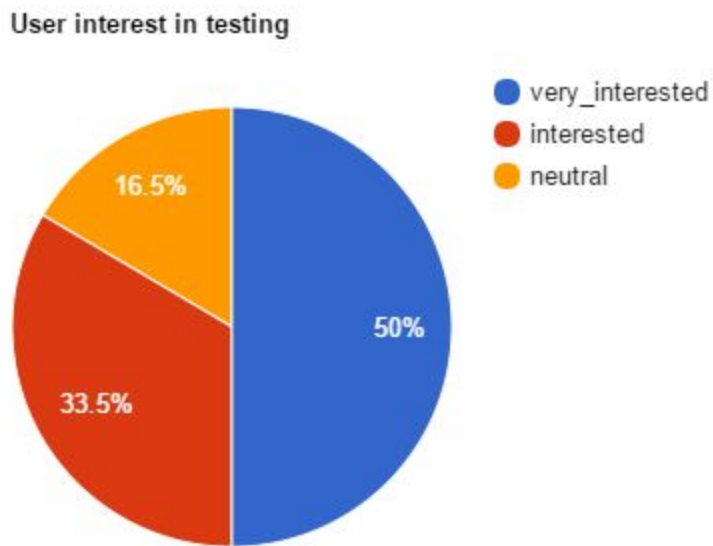
- a. Very comfortable
- b. Comfortable
- c. Average
- d. Not comfortable
- e. Strongly not comfortable



Most of the users were very comfortable with using smartphones. Out of the 6 participants, 4 of them were very comfortable with smartphone usage, whereas 1 was comfortable and the other rated as average in this regard. The main reason for this high percentage of comfortableness of smartphone usage is the participants were all undergraduate students at Michigan Tech and they were all well versed with smartphones for a long period of time now.

2. Are you interested in taking up this usability testing for our COFFEE application ?

- a. Very interested
- b. Interested
- c. Neutral
- d. Not interested
- e. Strongly not interested

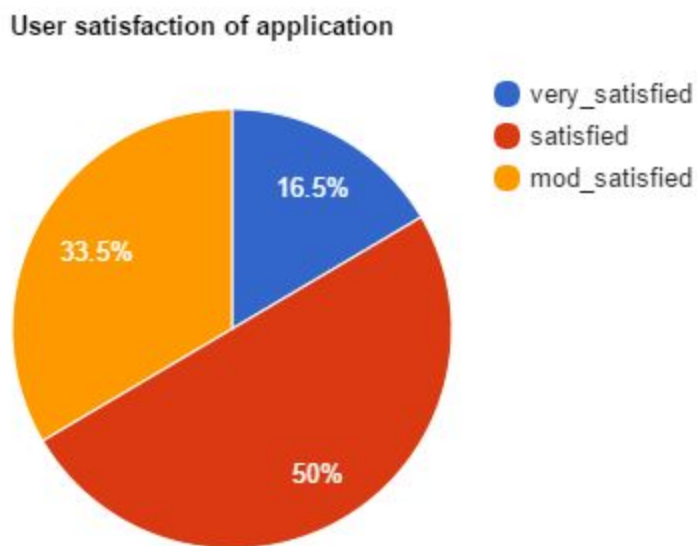


Most of the students were interested in testing this application and this question was mainly to ensure that the participants were in the right frame of mind before testing the application.

Post interview questionnaire:

1. How much satisfied were you overall with the interface of the application ?

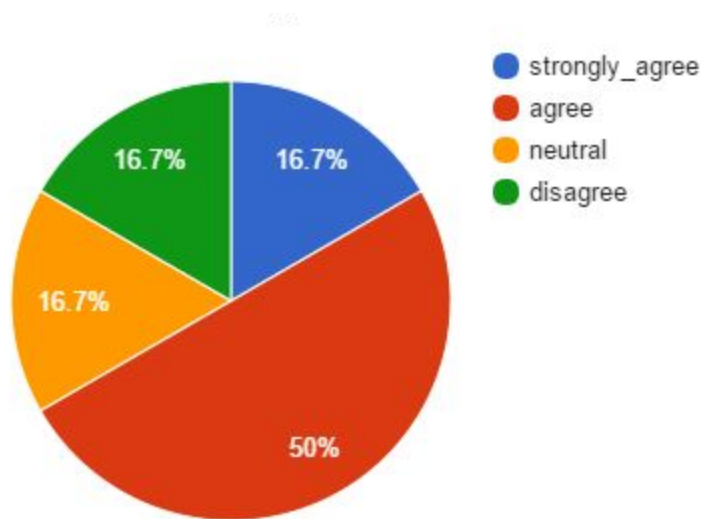
- a. Very satisfied
- b. Satisfied
- c. Moderately satisfied
- d. Average
- e. Not satisfied



One participant was very satisfied with the interface of the application were as 3 of them were satisfied. Two participants were moderately satisfied with the application and they wanted some aspects to be changed in the application.

2. Do you think the application will be easy to use if you do not have too much experience with smart phones ?

- a. Strongly agree
- b. Agree
- c. Neutral
- d. Disagree
- e. Strongly disagree

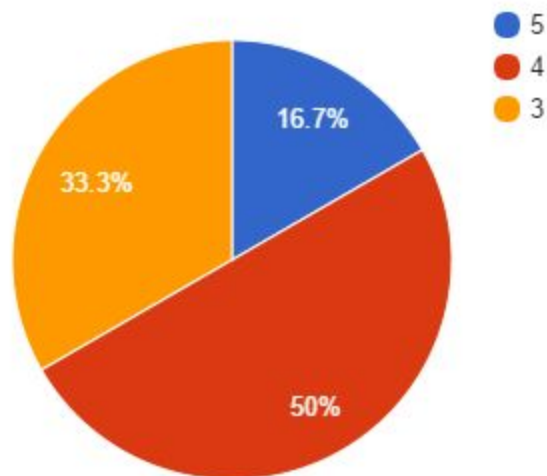


When asked to the users if the application would be clear enough to be used by people who do not have much experience with smartphones, the response from the participants was a little mixed. One participant strongly agreed, three of them agreed, one participant had a neutral stand whereas one participant disagreed to this statement.

3. How much would you rate the application overall with respect to its simplicity and ease of use on a scale of 5 ?

- a. 5
- b. 4
- c. 3
- d. 2
- e. 1

Rating of simplicity of application



When the participants were asked to rate the application on a scale from 1 to 5 (1 - least and 5 - maximum), most of the participants (three of them) rated a 4 whereas two rated a 3. Only one participant rated the application a full 5.

General Results :

In this section, I have summarized the general results obtained from the usability tests conducted.

In the first test, many users were not very clear of what was meant by the north direction and when asked to select the north direction, two users got stuck and needed assistance to proceed. Other users who managed to select the north button also took extra time to figure out what they had to do. And regarding the selection of leaves as infected, the users were happy with the reactivity of the interface of this leaf selection page. Three users had the same comment of changing the Back button from Grey to Blue so that it is clearly visible from the leaf selection page when the user has to come back to select other directions after completing a particular direction.

In the second test, all users were really impressed with the details provided in the help section and they got very clear with the reason and working of the application after reading the About section. Four out of the six users felt that any new user after registering to the Coffee application must be redirected to the Help page initially for the first time so that they will be known what to do and how to operate through the application. And when selecting the level of infection from the shown sample images, the users achieved a correctness accuracy of about 83% identifying the correct levels of infection in the leaf 15 times out of the 18 observations made.

In the third test, most of the users were satisfied with the previous submissions page and they were able to scroll down through the page to find the submission made on a certain date. Five out of the six participants performed this task correctly whereas one of them selected the wrong dated submission. One user had the suggestion of having the location of the submission also in the past submissions as a separate column in the middle so that the user can get more details of where they made those submissions without going into the submission record every time.

In the fourth test, most users were able to get the location in quick time after clicking the find me button. A reason for this high success rate would be the usage of MTU internet which is very fast. There might be a case where this application is being used in a place where internet connection is not this fast. One of the participant suggested to have a loading status bar until the location is fetched into the application.

In the fifth and final test, there was a major concern which was existing among all the participants. Five of the six participants were not able to complete this test without assistance. The main problem faced by them was when they did not click on all the directions, they were not allowed to submit. Even if no leaves were infected in a particular direction, the user had to click the direction and get back before they can submit the submission. Users were not very happy with this method and gave several suggestions to improve this interface. Two of them suggested that they could have an alert message if the user tries to submit without clicking on all the

directions and the others felt that the application should automatically assign 0 to all the unselected directions when the user clicks Submit.

IV. CONCLUSIONS :

Here are the following changes I would like to suggest based on my analysis of the test results and what was felt in general by the participants.

→ Labelling the directions parts as N,S,E,W would make the instruction more clearer to the user using the application and it would help them identify that these are the buttons which represent directions

→ I would recommend changing the color of the Back button in the leaf selection page from grey to blue so as to maintain uniformity with other pages in the application and this would make the user to easily identify that they had to hit this button to get back to the main submission page again to select infected leaves in other directions

→ If it is possible to add a status loading bar in the time when the GPS finds the location after clicking find me button, that would be a nice small addition

→ In the submission page, “Save” could be changed to “Submit”

→ When the user clicks on Submit before selecting infected leaves from all directions, it is necessary to alert the user that they have not done so and notify them that they have to click on all directions before submitting. The interface now does not allow the user to click submit only. This is confusing and needs to be changed

→ Location where the submission was made could be added to “Submissions” page if the size constraints does not cause big changes to the design of the page and if it is possible to change in the available short time

→ Every new user must be redirected to the “Help” Page as soon as they register and must be ensured that they have read the about section completely before they are allowed to use the application. This would make them better prepared to make submissions without any confusions or errors.

→ A personal suggestion would be to have a text to speech system of reading out information in the about section to aid people who are not well versed in reading text. Since the application is to be used by farmers this would be a very useful addition.

→ Uploading images and the login functionality has not been fully implemented and hence were not part of the testing process.

Appendix A - Undergraduate attendance report:

The Undergraduate team was very cooperative throughout the Usability testing process and for all the sessions, there were at least two of the team members helping out and taking notes when I conducted the tests with the participants. At times, there were even more than 2 team members present to help. I would like to thank the undergraduate students for helping me out in my usability tests.

Appendix B - Bug Report

Bug Number	Bug Name	Bug Description	Bug Uniqueness
1	Directions unclear	The five directions as buttons were not clear to identify at the first glance	More than half the users had this issue
2	Before submit	Users were not alerted that they had to select all 5 directions before submitting	Most of the users had this issue
3	Redirect to Help	Every new user can be redirected to the help page after they register automatically	Most of the users felt this was required