

Evaluation Assignment 6 – Usability Testing Report

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Introduction

User Interface Description

Pacaya Volcano Monitor App is an application for tour guides and tourists to give their observation data about Pacaya Volcano while visiting it. Users use their smartphones' web browser to go to application home page. From there they can navigate to different forms for submitting information like lava, explosion or plume etc. observations. There is admin login page in which administrator or scientist will login and directed to another page from where he/she will download the observation data.

Test Goals

The goals of usability tests for Pacaya Volcano Monitor are as follows:

- Ease of use
- User's feedback
- To find any issues in performing the desired tasks of the application
- Finding any bugs which may hamper the functionality of the application
- Consistency of design
- User's learning of the application process

Test Description

The test process of the Pacaya volcano monitor application was simple. The process of the usability testing followed the following steps:

- A participant came, read a consent form and signed it.
- Then the participant answered some pre-test questions
- After that, the main part of the testing started where there were six scenarios for each participant. In each scenario, participant performed some tasks.
- Test observers took notes of the whole testing process and observed user's behavior. If participant asked any question, they answered it keeping in mind not to influence the original real life like scenario.
- After the scenarios were gone through, then participant answered some post test questions and gave any comment or feedback.

There were six test scenarios for each participant. These scenarios are – navigation through the application, testing lava form, testing the plume form, testing the explosion form, uploading pictures and admin login. In each scenario, participant was asked to perform certain task. In the process of performing the tasks, if any problem occurs or any UI elements did not show the expected behavior, it is noted as bug.

Test Plans

Before the main part of testing started, each participant were asked to answer some pre-test questions. I tested six scenarios for the Pacaya Volcano monitor. Originally there were seven scenarios but I could not test the test scenario of observation data download because this feature was not developed at the time of testing. There were some defined tasks in each test. Participant were asked to complete the tasks in each scenario. Bugs and observations from these scenarios were noted. The usability testing completed with each participating answering some post test questions. The original test plan per scenario basis is given below:

1.1 Testing scenario 1: Navigation and select the forms

- 1.1.1 Test Goals: The goal of this scenario is upon going to application website in a mobile device, the user navigate through the pages and find the correct forms to submit the observation.
- 1.1.2 Quantitative measurement list:
 - a) The time user needs to find the form selection page
 - b) The number of time user selects the wrong form for observation submission
 - c) The number of attempts it takes user to find the correct form
 - d) The number of times user goes to wrong page instead of form selection page.
 - e) The number of time users find it difficult to find the correct form and ask test coordinators for help
- 1.1.3 Scenario description:

Assuming the user as a tourist or tour guides, he/she goes to the application home page in the mobile device and tries to submit observation. After finding the create observation button, click on it and goes to the form selection page. He/she has to select the correct form for observation submission from the collection of three forms. At the end, user is navigated to the correct form page upon selection.
- 1.1.4 Task list:
 - a) Find the begin observation button
 - b) Click the begin observation
 - c) Find the suitable form to begin observation
 - d) Select the form
- 1.1.5 Qualitative measurement list:
 - a) User's facial expression
 - b) User's comments
 - c) User's attention in the application
 - d) User's comfort
- 1.1.6 Potential observations of the participant

- a) How user or participant is reacting with the application.
 - b) How the participant is giving attention to the task.
 - c) How the participant is being distracted by other elements of the application.
- 1.1.7 Bug report: Bug report form is attached at the end of this document.

1.2 Testing scenario 2: Fill out the Plumes form

- 1.2.1 Test Goals: The goal of this scenario is to fill out the information of plume observation in the Plume form.
- 1.2.2 Quantitative measurement list:
- a) The time user needs to find the correct form fields
 - b) The number of time user selects the wrong field
 - c) The number of time users find it difficult to find the correct field and ask test coordinators for help
- 1.2.3 Scenario description:
Assuming the user as a tourist or tour guides, he/she is in the Plume form page. The participant finds the correct field and fill up with the information.
- 1.2.4 Task list:
- a) Find the correct field for data
 - b) Fill up the field with information
 - c) Submit the form
- 1.2.5 Qualitative measurement list:
- a) User's facial expression
 - b) User's comments
 - c) User's attention in the application
 - d) User's comfort
- 1.2.6 Potential observations of the participant
- a) How user or participant is reacting with the application.
 - b) How the participant is giving attention to the task.
 - c) How the participant is being distracted by other elements of the application.
- 1.2.7 Bug report: Bug report form is attached at the end of this document.

1.3 Testing scenario 3: Fill out the Lava form

- 1.3.1 Test Goals: The goal of this scenario is to fill out the information of lava observation in the Plume form.
- 1.3.2 Quantitative measurement list:
- a) The time user needs to find the correct form fields
 - b) The number of time user selects the wrong field

- c) The number of time users find it difficult to find the correct field and ask test coordinators for help

1.3.3 Scenario description:

Assuming the user as a tourist or tour guides, he/she is in the Lava form page. The participant finds the correct field and fill up the information.

1.3.4 Task list:

- a) Find the correct field for data
- b) Fill up the field with information
- c) Submit the form

1.3.5 Qualitative measurement list:

- a) User's facial expression
- b) User's comments
- c) User's attention in the application
- d) User's comfort

1.3.6 Potential observations of the participant

- a) How user or participant is reacting with the application.
- b) How the participant is giving attention to the task.
- c) How the participant is being distracted by other elements of the application.

1.3.7 Bug report: Bug report form is attached at the end of this document.

1.4 Testing scenario 4: Fill out the Explosion form

1.4.1 Test Goals: The goal of this scenario is to fill out the information of explosion observation in the Plume form.

1.4.2 Quantitative measurement list:

- a) The time user needs to find the correct form fields
- b) The number of time user selects the wrong field
- c) The number of time users find it difficult to find the correct field and ask test coordinators for help

1.4.3 Scenario description:

Assuming the user as a tourist or tour guides, he/she is in the Plume form page. The participant finds the correct field and fill up the information.

1.4.4 Task list:

- a) Find the correct field for data
- b) Fill up the field with information
- c) Submit the form

1.4.5 Qualitative measurement list:

- a) User's facial expression
- b) User's comments
- c) User's attention in the application
- d) User's comfort

- 1.4.6 Potential observations of the participant
 - a) How user or participant is reacting with the application.
 - b) How the participant is giving attention to the task.
 - c) How the participant is being distracted by other elements of the application.
- 1.4.7 Bug report: Bug report form is attached at the end of this document.

1.5 Testing scenario 5: Take picture and attach to forms

- 1.5.1 Test Goals: The goal of this scenario is to take picture and select photos for appropriate form. Then the photo is attached and submitted with the respective form.
- 1.5.2 Quantitative measurement list:
 - a) The time user needs to take picture
 - b) The number of times user selects the wrong picture
 - c) The number of times users selects the correct button to attach picture
 - d) The number of times users cancels the attached picture
 - e) The number of times users find the task difficult to find the task and ask test coordinators for help.
- 1.5.3 Scenario description:

Assuming the user as a tourist or tour guides, he/she is in a certain form page. The participant finds the correct photo button and tries to take photo or select photo from the photo album.
- 1.5.4 Task list:
 - a) Find the photo upload button
 - b) Click the button
 - c) Select photo
 - d) Remove the attached photo
 - e) Go to step (b) for the second time and this time skip step (d) and (e)
 - f) Submit the form
- 1.5.5 Qualitative measurement list:
 - e) User's facial expression
 - f) User's comments
 - g) User's attention in the application
 - h) User's comfort
- 1.5.6 Potential observations of the participant
 - a) How user or participant is reacting with the application.
 - b) How the participant is giving attention to the task.
 - c) How the participant is being distracted by other elements of the application.
- 1.5.7 Bug report: Bug report form is attached at the end of this document.

1.6 Testing scenario 6: Admin login

- 1.6.1 Test Goals: The goal of this scenario is to test the admin login and going to the data download page. Another goal of this test is to test the response of the application if the wrong login information is provided.
- 1.6.2 Quantitative measurement list:
 - d) The time user needs to login into the application
 - e) The number of times user cannot login
 - f) How much data user can view after login
 - g) The number of times users find the task difficult and ask test coordinators for help
- 1.6.3 Scenario description:

Assuming the user as an administrator of the application, he/she tries to find the login button and goes to login page. The participant enters the login information and tries to login. After successful login, the admin user can view the data submitted by the other users.
- 1.6.4 Task list:
 - a) Find the correct button for login
 - b) Fill up the login information
 - c) Press login button
 - d) After successful login, user can view the data.
- 1.6.5 Qualitative measurement list:
 - a) User's facial expression
 - b) User's comments
 - c) User's attention in the application
 - d) User's comfort
- 1.6.6 Potential observations of the participant
 - a) How user or participant is reacting with the application.
 - b) How the participant is giving attention to the task.
 - c) How the participant is being distracted by other elements of the application.
- 1.6.7 Bug report: Bug report form is attached at the end of this document.

Results

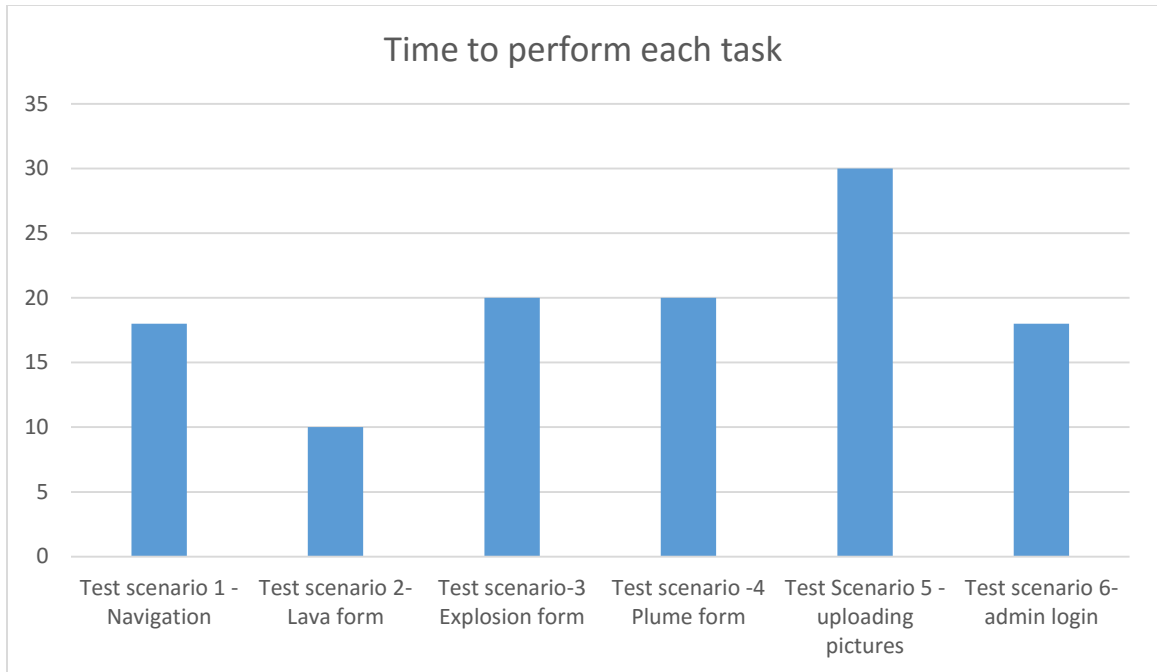
The total number of participants in the usability testing was five. Of them, two persons were males and three participants were female. Four of the participants were undergraduate students and one of them was graduate student. The incentive or reward for the undergrad participants was extra credit bonus in their respective undergrad courses. The participants were all Americans and their native language is English. Their age range was 18-19 years to 25 years. Every test was conducted in the afternoon in an office environment. Each participant was briefed about application with a short description before the test and was asked to imagine themselves visiting Pacaya Volcano as tourists or tour guides. Later for one test scenario, participants were asked to imagine themselves as the administrator of the application to collect the observed data of users. Based on total of 5 participants, the usability testing result is as follows:

Qualitative data result:

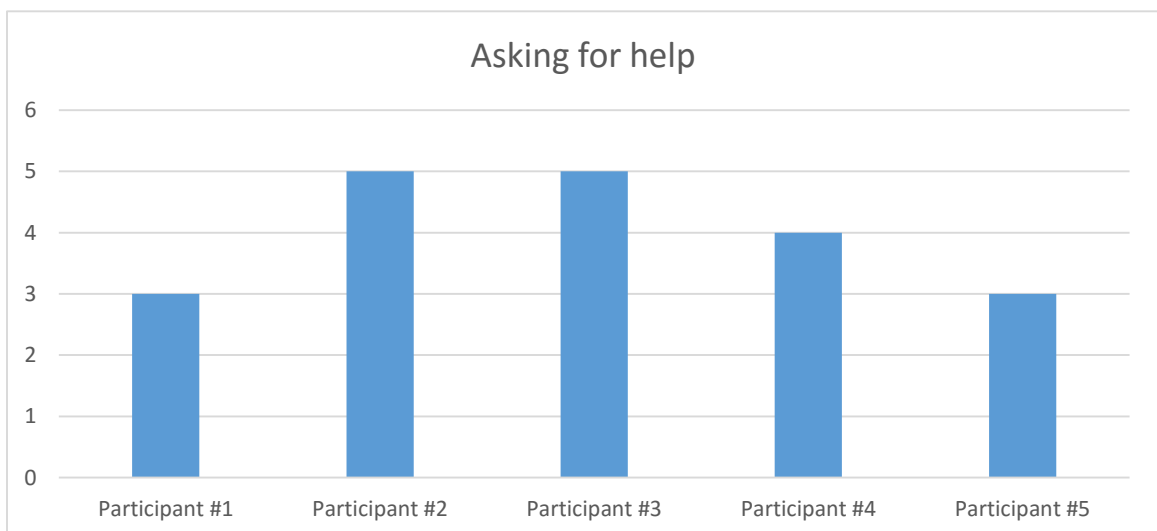
- **User's facial expression:**
Based three categories – not interested, neutral and interested, participants' expression was neutral to interested.
- **User's comments:**
User or participant asked for help sometimes. On an average, it is 4 or 5 times per user on a total of six scenarios. User's questions were basically asking for what to do next in most of the cases. There was no case where participants did not understand the task or how to complete the task. The task lists were simple for participants to follow.
- **User's attention in the application:**
Based on two categories – attentive and not attentive, usually participants were attentive. They were interested in completing the tasks and completed it with interest.
- **User's comfort:**
Users or participants were comfortable in general. Test observers were careful enough to make the testing process as comfortable as possible. Also while using the application, participants were comfortable and found it easy to use.

Quantitative data result:

- Time was measured in seconds for how long it would take a participant to complete each scenario. On an average for each test scenario, it took 10 seconds to 30 seconds. "Uploading picture" test scenario took the longest time as users needed to take photo or select photo from gallery to upload. Submitting the lava form was the quickest scenario to finish. The information on that page was simple enough to finish. Below a graph of time needed per testing scenario is given where X-axis denotes the name of scenario and Y-axis denotes the time in seconds.



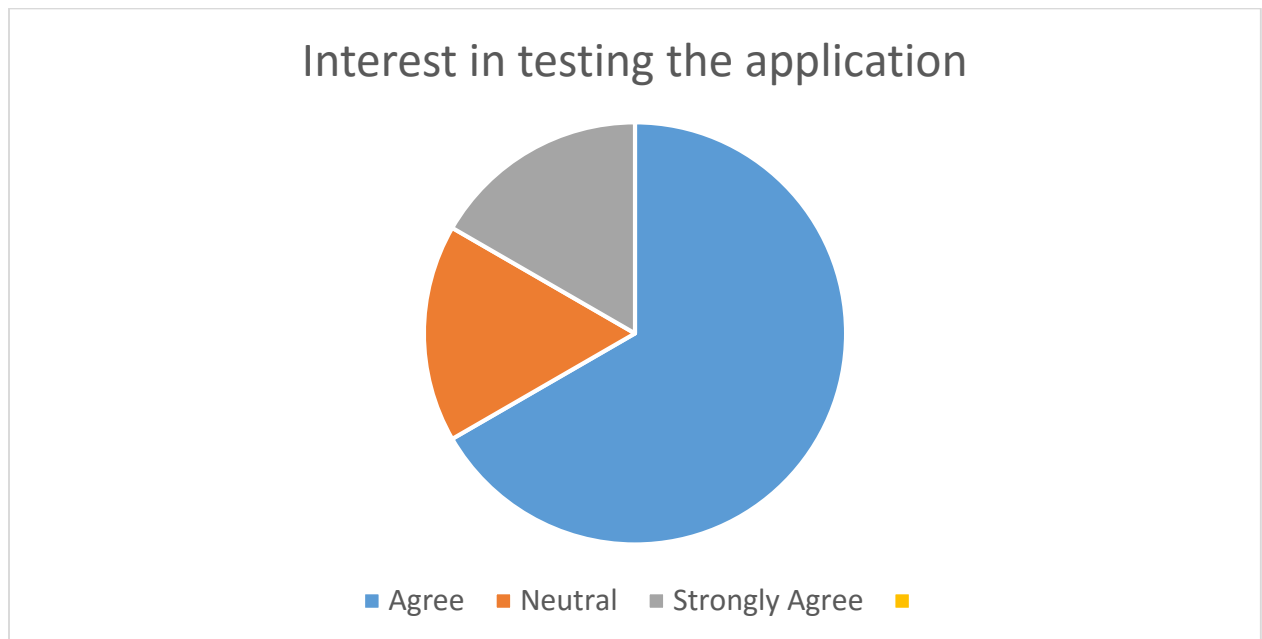
- Doing errors:**
 How many errors are done by participant was measured during testing process. Only once in a testing scenario, a participant was doing the wrong task. In all other cases, participants did not do any error and strictly completed the tasks in the right way.
- Asking for help:**
 How many times users or participants asked for help was measured. For each participant, it was 3-5 times for the all six test scenarios. For each participant, how many times they asked for help is given below in a graph where X-axis presents the participant and Y-axis presents the number of time each participant asked for help.



Pre Test Usability Questions Result:

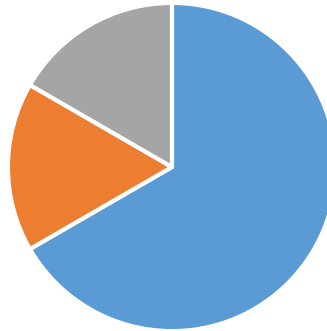
Before each participant took part in the testing they answered some pre-test questions.

- **Smartphone usage in years:** 2-6 years.
- **Interest in testing the android application:** Of the total participants, 60% of them agreed to the statement that they are interested in testing the android application, 20% of them were neutral and the rest 20% strongly agreed.



- **Interest in providing voluntary information** - Of the total participants, 60% of them agreed to the statement that they are interested in providing voluntary information on Pacaya volcano, 20% of them were neutral and the rest 20% strongly agreed.

Interest in providing voluntary info



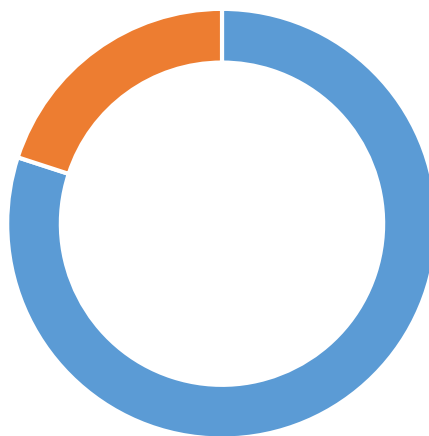
■ Agree ■ Neutral ■ Strongly agree ■ 4th Qtr

Post test questions result:

There were some post test questions after the testing is complete for each participant. Based on their answers following data is presented:

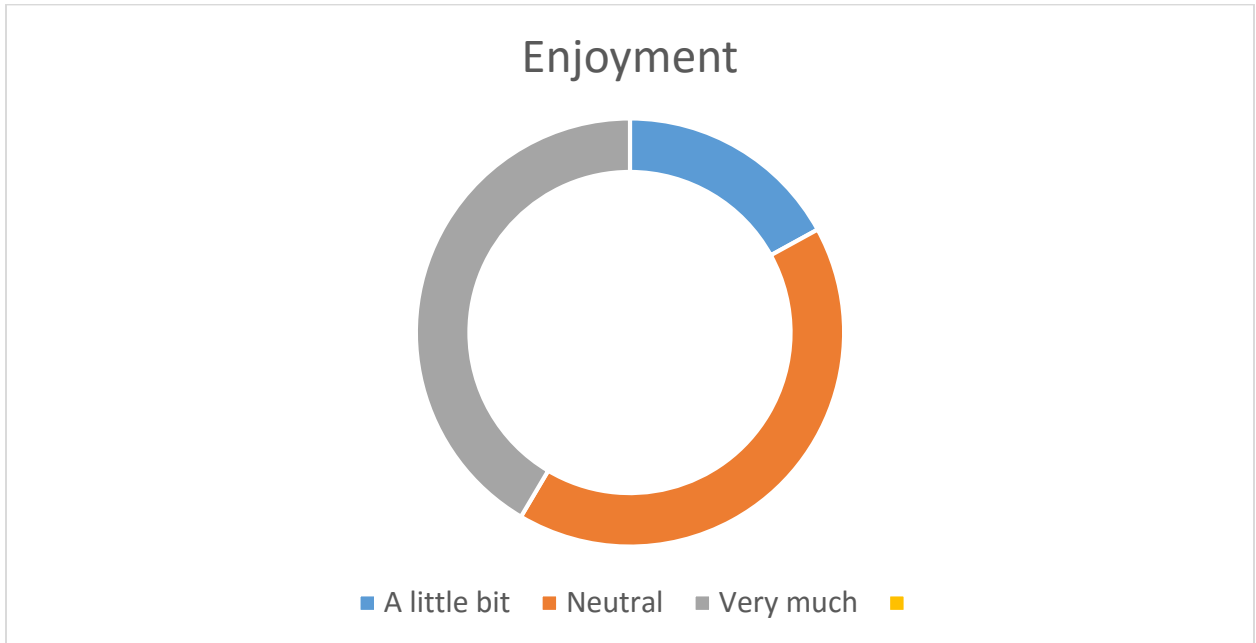
- **Ease of application to perform task:** 80% of the participants strongly agreed that the application was easy to perform task and rest 20% agreed to the statement.

Ease in performing task in application

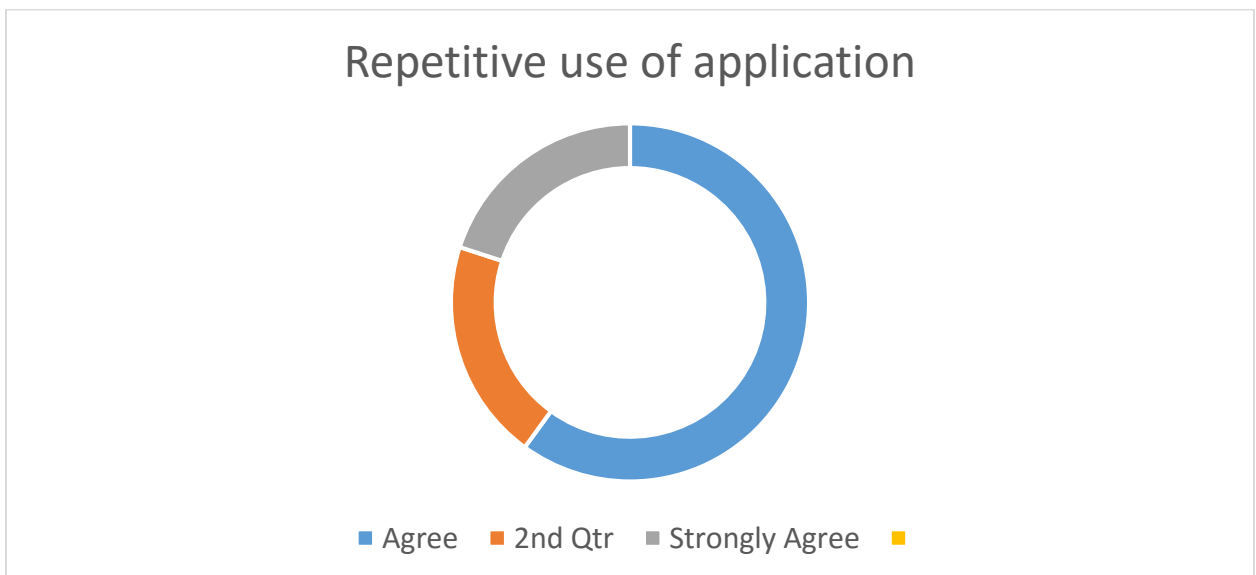


■ Strongly agree ■ Agree ■ ■

- **Enjoyment after using the application:** 60% of the participants enjoyed using the application a little bit, 20% were neutral and the rest 20% enjoyed the application very much.



- **Repetitive use of the application:** 60% of the participants agreed to the statement that they will use the application again, 20% of them were neutral and the rest 20% strongly agreed to the statement.



- **Any comment or feedback:**

Participants were asked for any comments or feedback about the application. All the comments were very positive like “straight forward application”, “Liked the color”, “Simple” etc. During the test there were some comments from the participants sometimes which were also positive.

Conclusion

The application was simple to use and packed with necessary features to make it useful for providing observation data on Pacaya volcano. However, there are some flaws in the application which I will mention in the recommendation to fix. Other than these recommendations, the application is in good state both in usability and functionality. Participants liked the application and used it without any major usability bug. There was one bug found and it is attached to this report. The bug level is moderate and does not hamper the application's usability a lot because there is alternative way to avoid that bug. So we can assume safely that, this application is ready to be used in real life with the recommendation being implemented.

Recommendations

The recommended changes for the application is given below. These changes are essential to make the application usable in real life scenario.

- Implement the feature of users' observation data download by administrator.
- Implement logout functionality so that after login, admin can log out.
- After submitting a form, there is general page with forms list and say "thank you" to users. In that page, navigation menu button does not work. So user cannot go back to home page using the navigation menu. Only pressing the logo button, user can return to home page. It is reported as bug and it needs to be fixed.
- In the home page, the "create observation" button is at the end of the page. If the button is at the top of the page or at least at the middle, then users can easily see the button whenever they open the application and they do not need to scroll down.
- Right now, after a picture is selected to be attached to a form, it is not shown in the form page. It creates confusion for user and needs to be fixed.
- In explosion form, participants sometimes found it difficult to press the small radio buttons. Making the radio button a bit large will be helpful.
- Whenever a participant entered text in a form field of a form, that field is overlapped by the popped up keyboard. So when participant was typing, he/she did not see what is being typed. It is a concerning usability issue which may result erroneous data input. It needs to be fixed.

Appendix A

Undergraduate group member attendance at the time of testing:

Test	Undergraduate 1	Undergraduate 2
First test	Alexis	Booth
Second test	Matt	Dalton
Third test	Dillon	Micah
Fourth test	Micah(absent, emailed me that he was sick)	Dillon
Fifth test	Dalton	Dillon

Appendix B

Bug report

ID	Name	Uniqueness	Description
1	Navigation Menu open error	Once happened for only one participant	The location of the bug is the thanks page after a form submission. The navigation menu on that page does not respond to press. It does not open. So user was unable to navigate to other pages. Only hitting logo button beside the navigation button brought the user to home page where the navigation menu works and user can go to any page.