FINAL REPORT

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The Trio

Objective

The objective of this evaluation is to determine the potential of the usability of shopping savings website. The study helps us to determine whether the system helps to satisfy the user's requirement and understand user experience. The difficulties encountered by users are considered and further implementation would be undertaken in order to make the system function properly. Moreover the team has specifically emphasized in collecting the quantitative and qualitative data. These are gathered based on the task performed by the user to test the overall usability of the system.

To be specific, users are given some task and the time taken to perform the task is recorded. For example, the time take for a user to compare the price of items and select the cheapest store is determined. There is more attention paid to the problem caused when performing the task. One way is that we try to understand whether the user knows on how to recover from errors when navigating through the web app. For example, we observed whether the user knows how to change the store in the price comparison webpage. General criticism and comments from users for further development on the usability of the system is also an important part of the objective.

Participants

There are 4 participants in this study. All these participants are prone to errors. The errors caused by these users are very important to improve the system. We have decided to recruit the following participant:

- Two participants who are employed

  This person needs to be at the age of around 40 and can be a person who is employed in the IT industry. People who have more knowledge about computers and using software would cause less number of errors and may find ways to fix them very easily. Moreover people of the age of 40 and who are employed tend to have experience in buying grocery items from different stores. Hence they are familiar with the price comparison of items and selection of grocery stores which help them to be economized.

A professor at university or any other working class person known to any of the group member would be recruited for this study.

- Two university student who are not enrolled in Computer Science or any other engineering degree

  There can be creative ways to redesign the application due to the feedback about this app by the university student. Students have less experience than working class person when comes to grocery shopping. Hence there can be new suggestions to improve certain functionalities and features to improve this web application.

  We can find this student at University of Victoria for this study.

Recruiting method:

We decided to email the people who meet the criteria mentioned above. There were advertisements posted in Facebook for recruitment. In fact the most participants we recruited were known to the group members.

The users are allowed to perform the set of tasks alone. The team member who conducts the study provided assistance when the user needed help. These tasks are assigned to test the functionalities and usability of each webpage.

Tasks to be completed:

1. Sign up
2. Sign In
3. Buy some items for the cheapest price
4. Choose Pick Up as purchase method and find the information of the closest store
5. Pay by cash during pick up
6. Save the receipt
7. Repeat the same set of tasks by choosing **Delivery option** as purchase method and **Pay Online** as payment option.

Procedure

This evaluation was conducted in a Co-operative style. The participant is assigned to do the task with the system. At the beginning, the participant was asked to sign the consent form.

The member of the team (evaluator) who conducts the evaluation assigns the tasks to the participant. The time starts to count when the participant performs the tasks.

The first part of the study is to collect the quantitative data. The evaluator observes the following while the study is conducted:

- The number of unnecessary steps taken
- The number of times the participant seek for assistance

The evaluator is responsible to observe and write down the reasons for the participant to take the unnecessary steps. The reasons for the assistance provided needed to be noted down.

The second part of the study is collecting the qualitative data. This part is done once each participant completes the set of tasks. . Questions were asked from the participant. These questions are discussed in the Measures section. The evaluator is required to ask the questions that are used to gather qualitative data.

The complete study takes maximum of 20 minutes depending on the time taken to complete the tasks (qualitative data).

Measures

Our study was conducted in a cooperative fashion. Candidates were required to complete certain tasks using our application, and a team member was accompanied alongside as a 'coach' to provide assistance when necessary. The candidates were encouraged to provide criticisms.
As we are unable to conduct a large scale evaluation study due to the limitation of time and human resources, focusing on collecting quantitative data will not produce a representative result due to the insufficient sample size. Thus, we have concluded that cooperative testing is a more viable method. Such approach allows efficient collection of qualitative data, especially the identification of flaws that are unexpected in the design process.

Quantitative data

Although cooperative testings are not meant to facilitate quantitative data collections, numbers are still important for forming a concrete indication of our application's usability. The following table shows the criteria of our quantitative data collection.

Total time taken	Total time taken to complete the task
Number of unnecessary steps	Number of extra steps taken compared to our expected

taken	procedure (e.g. if the user has to go back modify a piece of information twice, two 'unnecessary' steps would be counted)
Number of times where assistance has to be given in order to proceed	In other words, the number of times where the user gets 'stuck'

Qualitative data

Through listening to the live feedback from the candidates, we primarily aim to identify flaws that were not accounted/ expected by the developers. The following questions will be asked at the end of the survey to form the basis of our qualitative data. Rather than specific the questions asked were general and it guides the users to think critically.

What do you like/dislike about this application?	The user is asked to mention the general impression about this application.
Does the application follow a logical flow? If not, please explain.	What seems logical to developers might not be logical to users. This question prompts information about the users' conceptual model.
Do you have a good idea of where you were when going through each of the step?	Again, asking the candidate about his/her understanding of the overall structure of the application, this question prompts information about the users' conceptual model.
Any other suggested improvements for this application?	This question prompts information about the general viability of the application.

Setting

The location can be a place where there is a laptop or desktop computer in which the user can access internet to run the application. We can use our one of computer labs in Engineering

Computer science building of University of Victoria for this purpose. If that is not possible we can use the personal computers at home or office of the participant.

Since the study uses co-operative method, there is one evaluator per participant. Each participant is evaluated individually. The evaluation takes place depending of the time that is convenient for the participant. Most frequently, the evaluation took place during day time.

Time

The total duration for conducting the study will be a maximum of 20 minutes. We expect the user to finish the set of task in less than 10 minutes. Around 3-5 minutes of the total 10 minutes are allocated for the user to recover from errors or go back to a different page and change options according to the task assigned. The time can vary depending on the user and the tasks performed.

Notes and time taken are used to organize the qualitative and quantitative data.

Results

The results contain Quantitative and Qualitative data collected. This section discusses the further analysis of the data that is been collected. Following statistical information are discussed in this section:

- The average number of time taken to perform set of tasks
- The average number of unnecessary steps and number of assistance given

The qualitative data discusses the criticism and comments given by participants. These comments are useful and they are used to find ways to improve the system. There are also suggestions and improvements discussed by users.

Qualitative data

Student 1

Total time taken	13 minutes
Number of unnecessary steps taken	The user thinks the store suggested is not the closest one. The user has forgotten the cheapest store he chose. 2 unnecessary steps
Number of times where assistance has to be given	Once - no feedback given in save button

in order to proceed	

Student 2

Total time taken	15 minutes
Number of unnecessary steps taken	The user thinks the store suggested is not the closest one. So here wanted to change the store.(extra step) The user has forgotten the cheapest store he chose. He wanted to go back and check the store he selected when he was about to make the online payment(payment page) Therefore he cancelled the payment and went back to Price Comparison page(extra step) 3 unnecessary steps
Number of times where assistance has to be given in order to proceed	Twice - no feedback given in save button - When the user cancelled the payment in Payment page, he didn't know which button to click to go back to price comparison page

Working person A- works in IT industry

Total time taken	11 minutes
Number of unnecessary steps taken	He observes that the two different credit card options (Visa & Master) remains active. Hence he decided to try debit first and then credit.(extra step) He checked whether both credit and debit card options work.

	1-Unneccessary step
Number of times where assistance has to be given in order to proceed	None

Working person B

Total time taken	13 minutes
Number of unnecessary steps taken	Participant tried signed in with the wrong username (which shouldn't work), so he signed out and signed in with the correct one. (extra step) He clicked to add 4 items in create shopping list page. Now he wanted to choose only three items. So he unticked that last checkbox of the list of items. Then he went to Price comparison page and saw that the last item he already unticked still appears in the list. Therefore he wanted to go back to create shopping list page to modify the shopping list.(extra step) 2-unnecessary steps
Number of times where assistance has to be given in order to proceed	Once- He doesn't know how to remove the items from the list even though he unchecked the checkboxes.

Statistical information

Participant	Time taken to complete the tasks	The number of unnecessary steps taken	Number of times assistance given
Student 1	13 minutes	2	1

Student 2	15 minutes	3	2
Working person A	11 minutes	1	0
Working person B	13 minutes	2	1

Averages

Average time taken to complete the tasks	Average number of unnecessary steps taken	Average number of times assistance given
13	2	1

Qualitative data

Student1

What do you like/dislike about this application?	"Yes, I like this website because it shows the prices of items of different stores in one page. "
Does the application follow a logical flow? If not, please explain.	"I observed that there are negative values displayed when I accidently clicked the "down arrow" in quantity selection option. This seems not logical because at times user can accidentally choose wrong quantity and this leads to wrong calculations."
Do you have a good idea of where you were when going through each of the step?	The Sign Up page does not give any feedback after the account is being created. Ideally any system is required to provide feedback for users to identify the next steps to perform.
Any other suggested improvements for this application?	"The important information like price of total items selected, the chosen store has to be displayed in each page till the end of the whole process. This helps user to avoid going back and check for prices and the store he selected."

Student 2

What do you like/dislike about this application?	"It looks nice and simple; I like how it only requires you to do one thing on each page. Very easy. However, I didn't care about the brand of my item, but there is no easy way to get the cheapest brand. "
Does the application follow a logical flow? If not, please explain.	"The steps feel natural and logical. But the checkboxes on the choose item page feels unnatural. I took quite some time to figure out what it's for."
Do you have a good idea of where you were when going through each of the step?	"Overall, yes. But it would be better if there is something to keep track of the progress, since I sometimes had to go back and check the price or location."
Any other suggested improvements for this application?	"No"

Working person A

What do you like/dislike about this application?	"The interesting thing about this application is that users do not need to spend time in finding out the grocery store according to their budget. This website gives all information regarding that. Prices displayed in the price comparison page have problems. Dollar and cent amounts aren't fixed to two decimal places. Sometimes only one decimal place is displayed, other times, there are some accuracy errors with 12 decimal places being displayed"
Does the application follow a logical flow? If not, please	"The delivery option page shows icons to select on top of the page. These icons are not highlighted and hence the user

explain.	doesn't know which icon he chose. Instruction to remove items from shopping list is not mentioned."
Do you have a good idea of where you were when going through each of the step?	"No feedback in sign up page An extra black arrow shows up which confuses the user. The use of this arrow is not mentioned in the page. Quantity of items chose is not displayed in price comparison page."
Any other suggested improvements for this application?	"The total prices of items when comparing needs to be indicated with colors showing the expensive and the cheapest one. There are some issues with the names and titles given in different pages. This needs to be fixed by renaming them."

Working person B

What do you like/dislike about this application?	I like the simplicity of it, but I don't like the item selection page as it is not easy to browse through the list. A search function would help.
Does the application follow a logical flow? If not, please explain.	Yes, I could the steps match my expectation. But on the item selection page, the "compare" button seemed a little bit confusing. It would be better if someone explain to me what that step does beforehand.
Do you have a good idea of where you were when going through each of the step?	Yes, the procedure is pretty much the same as other shopping websites so I knew what to expect. However, if I weren't given a list of task, I might get confused because I wouldn't know what some of the steps do. Especially ones that are not typically in shopping websites.(Compare, choosing pickup location)
Any other suggested improvements for this application?	Something to keep track of the selections (items and pick up location) I made so I don't have to go back and forth to double check them.

Discussion

This section discusses detail information on the results gathered. There are certain assumptions and limitations for this study.

Our expectation on completing the set of tasks was maximum of 10minutes. However, the average time taken to accomplish the set of task is 13 minutes. This tells us that this system has to be made more users friendly and it needs better instructions and feedback for user. The average number of times the user requested for assistance was 2 times. This information is useful to understand the number of times the user can make an error.

Most frequently the users usually forget the cheapest store they chose. And this causes in going back to the previous web pages and check the closest store they chose. Moreover the users also assume that the store they chose is not the closest one. Hence they wanted to change the store and select the closest store.

The major reason for this problem to occur is because the store they chose is not shown in the pages where it is required to be shown. The pick-up option page which shows the map of the store location does not instruct the user that the system provides the closest store.

There were two users who found that the save button does not function at all. At this point they had to ask for assistance. This button needs to be implemented in order for user to successfully complete the shopping process.

One of the participant was confused with the card options (Visa & Master) available for both credit and debit card. When the user selected the credit card in the beginning the Visa option was already being selected. This did not let the input for the user in the first attempt because radio buttons did not appear blank. Moreover once he changed the card type, the card options still remains the same. This does not get reset and the radio button doesn't show blank for the user to select.

The working person B observed a problem in the "Create shopping list" page. This caused an unnecessary step. The items he unticked in the shopping list still appear in the price comparison page. This is a problem caused in the back end of the system. As a result of this problem the user had to go back to the previous page and have to make changes to the shopping list.

There were negative values displayed in the quantity selection criteria of shopping list page. Moreover users complained that the price comparison page does not show prices with proper decimals which are unpleasant and unprofessional. There is no feedback given by the sign up page once the user creates a new account.

Improvements

The qualitative and the quantitative results help to derive the improvements for the system .The following improvements needs to be made for the system:

1. The important information such as store selected, number of items chose and the total amount to be paid needs to be displayed in each page till the user finishes the shopping process.
2. The pick-option page should instruct the user that the system provides the closest store.
3. The save button used for saving the receipt should be re-implemented with feedback.
4. There is a black arrow which randomly pops up in some pages. This needs to be removed to avoid confusion.
5. The payment option page needs to be re-implemented because the radio buttons in that page does not work properly.
6. The check boxes in price comparison page do not function properly. The items which were properly selected should be forwarded to the price comparison page.
7. Negative values should be omitted in the quantity selection of the shopping list page.
8. The sign-up page should provide feedback when the user creates a new account.
9. The location icons in delivery option page needs to be highlighted and form data should be saved.
10. The quantity of items chose needs to be mentioned in the list.
11. The "Compare" button should be given further details on its functionality.
12. Prices of items need to be displayed with different colors showing the cheapest and the expensive ones.

Assumptions

We have assumed that students are always busy and they wanted to save time and money. More specifically, they wanted to have a system that is useful to save money in their grocery items. The working people interviewed are middle class people and we assume that they have good shopping experience. All the participants are constraint to time and money.

Limitations

The study is limited with the city of Victoria and we do not know how the users of other cities react towards this application. Due to lack of time and team members, we have a limitation in the sample size of the users who were used in the evaluation. We did not know the ages of the university students.

How the study meets the objective?

We observe that our study helped us to gather more data for the improvement of the application. We have gathered both qualitative and quantitative data which were sufficient to evaluate the usability of the system. There were lots of flaws identified in the evaluation. We were able to identify the average

time taken to complete the shopping process. In fact, there were comments and suggestions that was given by user for improvement.