

Mini-Project Report W08: Evaluation Report and Requirements

Team: Cosmopolitan

Topic: Save-on-Foods (Grocery List Feature)

Sasha Sokolov, 22851448

Vanessa Lee, 45559374

Kevin Zhu, 56987274

Roger Huang, 75776922

Cici Bai, 89606362

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Summary of Evaluation and Results

a. Human Need and Central Tasks:

The human need is to create a grocery list and order its contents online. There are two central tasks to fulfill this need. First, creating a grocery list. Second, adding items from the grocery list to the shopping cart to check out the items.

b. Evaluation Goals:

1. How easily are users able to find and access the grocery list feature?
2. How efficiently are users able to accurately create grocery lists and modify its contents given a list of items?
3. To what extent are users able to add items from the grocery list to their shopping carts in order to check out?

c. Participant Pool:

Our participant pool will consist of university students (≥ 18 years of age) who are considered likely to use online grocery delivery services (those who live alone, cook their own meals, etc.). An appropriate number of participants would be 10 people in total.

d. Protocol:

The participant will be tasked (and observed) to create a grocery list on the Save-On-Foods website given a set of items. Before the observation, the participant must provide consent on their participation in the study and their consent on being recorded (Appendix B.2). First, they will be asked a set of preliminary questions regarding their experience in grocery shopping. An example includes asking the participant to rate their prior experience from 1 (not experienced) to 5 (very experienced) with both online shopping platforms and online grocery shopping platforms. Appendix A.2 contains the comprehensive list of pre-observation questions. Second, the participant will be told that there is a grocery list feature on the Save-On-Foods website and that their task is to create two grocery lists on the site, “Snacks” and “Meal.” Given a list of items, they are asked to add each item to one of the two lists. Once the lists are created and the items are added, participants will be asked to delete and replace items in the list, rename the list, and add items from the list to the shopping carts to simulate the checkout process. Detailed instructions can be found in Appendix A.2.

Their actions will be observed through screen-sharing, and they will be asked to think aloud during each step of their ordering process. A coding sheet (Appendix A.2) will be used by observers to gather qualitative and quantitative data, such as the time taken for each step, as well as relevant observations. Each participant will have two observers – one to facilitate the study and one to complete the coding sheet. After the observation process, the participant will be asked a set of questions via a semi-structured interview to evaluate their experience. The post observation interview questions can be found in Appendix A.2.

e. Evaluation Rationale:

First, we chose direct observation using the think-aloud method as our first evaluation technique, as it provides us with valuable insights into the user's thoughts. The observation technique allows us to collect both quantitative data (e.g., time taken for each step) and qualitative data (e.g., direct quotes from the user) using a coding sheet. There are also possibilities to collect objective (e.g., time recorded for each step) and subjective data (e.g., user's emotions) using this method, allowing us to draw more rich and nuanced conclusions.

Second, we chose individual, semi-structured interviews as our second evaluation method, because we want to probe the user's experience beyond just observations. A semi-structured interview will allow us to interact directly with the user and will give us the flexibility to inquire about an interesting or unique occurrence in the experience. It also allows us to gain deeper insight into the user's feelings and thoughts after the experience – some of which may not be captured by observations or a survey.

Third, we conducted the evaluation through a remote session using a video conferencing tool, budgeting 10 minutes each for the pre- and post-observation interview, and 10 minutes for the direct observation. In total, each evaluation should take less than 30 minutes, which is reasonable and sustainable. We chose to ask questions about both the user's personal background and their experience because we recognize the diversity of our users' living situation and shopping habits. Recording this data will give us the opportunity for further analysis if needed. All recordings will be deleted when analysis is finished.

f. Analysis:

Quantitative Results

For quantitative data, we recorded the time taken for each step and the number of times participants asked for assistance for each step. In the post-observation interview, we gathered Likert scale ratings for the perceived difficulty of the evaluation tasks.

A notable finding from **Figure 1. Average Time Taken for Evaluation Tasks** is that "Finding the Save-On-Foods Grocery List Feature" had an abnormally high average time. This is especially unusual, given that finding the feature for creating a grocery list – something that many shoppers use regularly – should be relatively easy, resulting in low findability. The feature's low findability is also supported by the binary "Asked for Assistance?" data recorded for each step of the observation. As shown in **Figure 2. Number of Times Participants Asked for Assistance**, two participants asked for assistance during the first step of finding the feature, while no other task needed assistance.

For the second and third goal of evaluating whether users are able to successfully create and transfer lists to the shopping cart, the time recorded suggests that users did not find these tasks difficult. However, **Figure 3. Average Likert Scale Ratings on the Difficulty of Evaluation Tasks**, containing the participants' perceived difficulty of different key stages, shows that the "Searching and Adding Items to the List" and "Finding 'My Lists' feature" had a neutral average Likert scale score, while all other steps had a low average Likert scale score. In other words, this data confirmed that finding the feature, as well as searching and adding items to the list were relatively more challenging than any other task.

Qualitative Results

The qualitative data collected consisted of recorded quotes during the think-aloud observation, as well as user's answers from the pre and post-observation interview. These results were mapped onto an affinity diagram using thematic analysis in **Figure 4. Affinity Diagram Based on Observation and Interview Data.**

Firstly, the "Difficult to Find and Discover 'My Lists' from the Home Page" theme from the affinity diagram supports the quantitative results discussed above. Several users could not find the "My Lists" tab initially, so they would hover over each section of the website until they eventually found it under their profile tab. Users tended to feel frustrated and only discovered the list feature by clicking into a specific item.

Participants also struggled to understand the purpose of the list and were confused by the difference between a list versus a shopping cart. One participant said: "Why not just use the shopping cart?," a common sentiment among many. An example of this is that some participants instinctively clicked "Add to Cart" instead of adding items to a list, even after they had previously learned how to add items to a list. "Save for Later" was also "badly named," according to many frustrated participants who did not immediately figure out how to add an item to a list.

Another common theme was that participants often tried to modify lists directly using the list interface, only to realize they were not able to. The list seemed to be lacking functionality in its interface, as participants complained they "can't add stuff to the list".

Finally, many participants compared the list feature with physical written lists or lists created on their phones. They generally stated that these alternatives were "easier" and "faster" to use. However, they also stated in the post-observation interview that a Save-On-Foods list can provide useful information such as price, stock, and nutrition labels. Also, many participants said that they could see themselves using the list if they regularly shopped at Save-On-Foods exclusively, or if they buy similar items every time.

g. Conclusions (Step 10):

The first goal of evaluating the findability of the 'My Lists' feature was initiated as it was a suspected weakness of the interface. The findability of 'My Lists' was established as a primary complaint and this sentiment was supported by the time and Likert scale data recorded.

The second goal of testing the efficiency of list creation revealed some weaknesses in the interface that we did not previously consider. Whilst users did not have any particular issues with finding items they were looking for, they were frustrated in the ability to add items to lists because the button lacked visibility, being hidden behind a click whereas the shopping cart wasn't, and the button was named "Save for Later" which is a very poor signifier since it doesn't have the word "add" or "list" as one might expect. For the latter half of the goal in which we wanted to know if users can subsequently modify their lists, we found that the majority of participants felt that there should be a swap feature inside the list itself versus simply deleting and searching anew. The functionality from the list interface needs to be increased to meet such basic requirements of what users expect from a list.

The last goal of testing the support for checking out lists also yielded unexpected results. The quantitative timing and Likert scale ratings didn't reveal any issues, but through the think-aloud and follow-up probing we discovered that while participants could check out lists easily, they did not understand the point of not having used the shopping cart directly.

Task Examples and Requirements

h. Task examples:

Task example #1

Mary is running a daycare and needs to keep track of ingredients to buy in order to cook meals for the children. Due to dietary restrictions and the pickiness of the children, she creates lists for recipes based on the different days she is working.

On most days, she would buy the same list of groceries for the same meals. However, some children may miss out on certain days. Therefore, she makes changes to her shopping lists with substitutions or removal of certain ingredients to fit the temporary changes in preference and restrictions. Her intern, Joe, is tasked with purchasing the groceries. However, he is uninformed on what to buy, so Mary makes sure to name the lists appropriately depending on the changes before handing it off to Joe. Joe can simply follow the list on what to buy without making mistakes.

Task example #2

Luke is an aspiring fitness influencer and is currently working on weekly meal prep plans. Due to his busy influencing schedule, Luke prepares multiple shopping lists for purchasing a week's worth of food at a time.

As it is difficult to plan for a week's worth of meals at once, Luke makes changes to the current list at the end of the week. He often swaps out ingredients for healthier options and removes ingredients he dislikes. If he does not enjoy any of the meals from that week, he may choose to delete the list completely and start over. In order to stay with the trend, Luke often creates new lists consisting of trendy foods but also references his other lists for ideas, as well as to keep his weekly options open when buying groceries.

i. Requirements:

- i) The interface must allow users to create and rename multiple grocery lists.
- ii) The interface should allow users to add, delete, or swap items in the grocery list.
- iii) The interface could allow users to add items from the list directly to the cart.

j. Justification for Requirements:

- i) It is important to be able to create and rename grocery lists because this allows users to maintain multiple lists for different recipes or purposes. The renaming feature is especially important since it allows users to organize and distinguish between lists. For example, one list may not have any dietary restriction items while another list may contain dietary restricted items.
- ii) The interface should be able to simulate a real handwritten grocery list. Adding and removing items from the list would be the basic functionality. Swapping items directly on the list allows the list to be more customizable, since the user can swap between different brands/alternatives. This

also saves time instead of deleting an item, searching for an alternative, and finally adding it to the list.

iii) There should be motivation for a user to use the list instead of a handwritten list. If users have to search for items and then add them to cart, the order process would feel much longer and frustrating. Being able to add items from the list directly to the cart will simplify the ordering process; users will save more time and are more likely to continue using the interface.

Appendix A

A.1) Figures and Tables

Figure 1. Average Time Taken for Evaluation Tasks



Time spent “Adding items to the grocery list”, “Deleting items from the grocery lists”, and “Replacing items on the grocery list” were processed to represent the time spent doing the task per item since the participant had to add several items.

Figure 2. Number of Times Participants Asked for Assistance

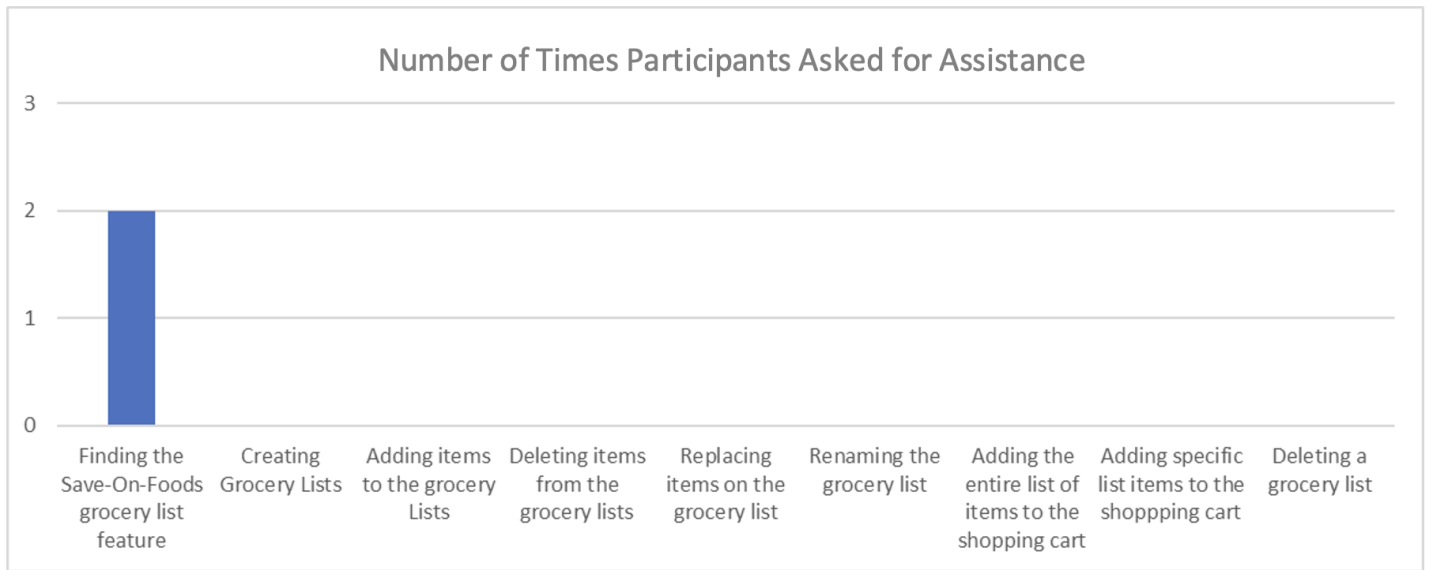
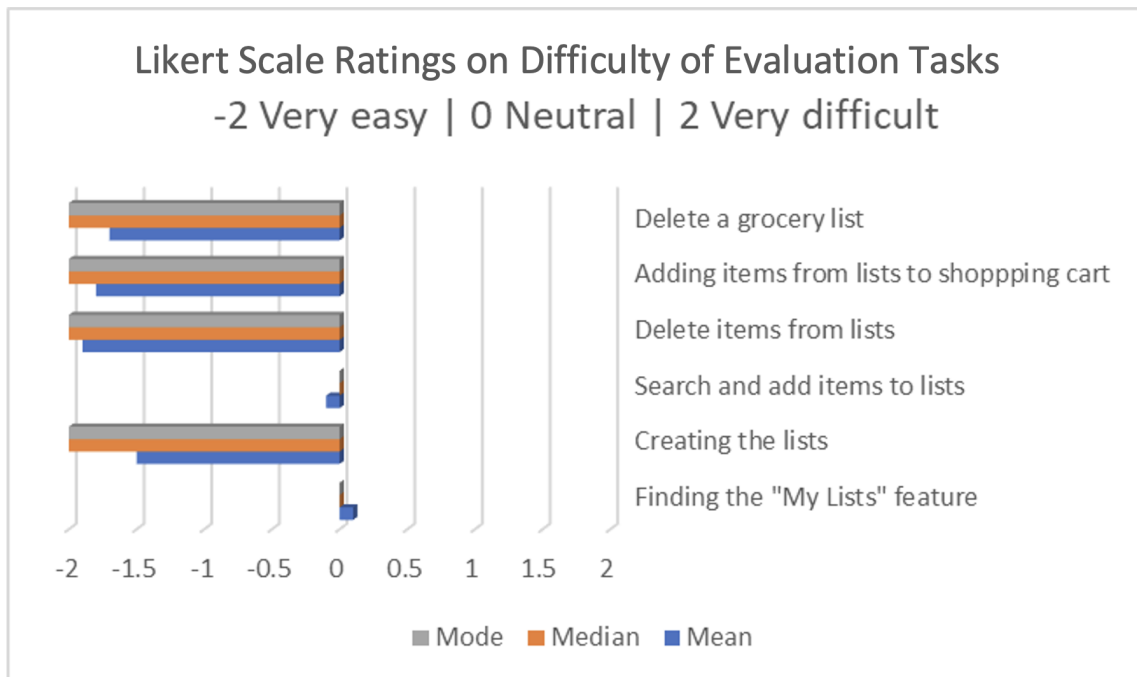


Figure 3. Average Likert Scale Ratings on the Difficulty of Evaluation Tasks



Data processed from 1 to 5 scale to -2 to +2 scale for legibility

Figure 4. Affinity Diagram Based on Observation and Interview Data

Please view the 2022WT2-T2D C (Mini) Miro Board for better visibility.



A.2) Evaluation Instrument – Interview Questions

Participant #: _____

Pre-Observation Questions

() = follow-up questions

1. Describe, in general, the methods you use to shop for groceries.
 - a. (For example, do you go in-person to shop, shop online, etc.)
2. Do you use a grocery list when shopping for groceries? Why?
3. Roughly, how many times a month do you shop for groceries?
4. How do you feel about online-grocery shopping?
5. Rate your experience on online shopping from 1 to 5 (1 = not experienced, 3 = neutral, 5 = very experienced).
6. Rate your experience on online grocery shopping from 1 to 5 (1 = not experienced, 3 = neutral, 5 = very experienced).

Post-Observation Questions

1. Describe how you felt during the ordering process.
2. Rate the difficulty of the following experiences from 1 to 5 (1 = very easy, 3 = neutral, 5 = very difficult) and why?
 - a. How difficult was it to find the grocery list feature?
 - b. How difficult was it to create the grocery list?
 - c. How difficult was it to add items to the grocery list?
 - d. How difficult was it to delete items from the grocery list?
 - e. How difficult was it to add items from the grocery list to your shopping cart?
 - f. How difficult was it to search for an item on the grocery list?
3. Would you use this grocery list feature again? Why or why not?
4. How would you compare this experience with creating a grocery list by hand?
5. Can you think of other ways that grocery shopping apps could help you shop for groceries more efficiently?

A.2) Evaluation Instrument – Instructions for Participants

Instructions for Participants

(Post Consent Form and Pre-Observation Questions)

During this entire process, please think out loud. Say whatever comes into mind as you complete a task. This might include what you look at, think, do, and feel.

Task: There is a grocery list feature on the Save-On-Foods website. We would like you to make a grocery list using this feature for the items below. Please refrain from asking questions about how to complete the task and try to do complete the tasks on your own to the best of your abilities. If you are particularly stuck, we can offer assistance.

1. Please visit the Save-On-Foods website [here](#).
2. Log-in with the given credentials:
 - Username: [Observer will send via chat]
 - Password: [Observer will send via chat]
3. Find the list feature on Save-On-Foods
4. Create two lists: one named “Snacks” and one named “Meals”.
5. Add the following items to your lists “Snacks” and “Meals” based on what you think is appropriate for each list:

• Spaghetti	• Tomato Sauce
• Broccoli	• Miss Vickie’s Chips
• Candy	• Ground Beef
• Loaf of Bread	• Chocolate Ice Cream
• Protein Bars	
6. Once the lists are made, please delete Miss Vickie's Chips and replace with Lay’s Chips, as well as replace Broccoli to Garlic on your lists.
7. Rename the list named “Meals” to “Dinner”.
8. Add all the items from the “Dinner” list to your cart and add 3 items of your choice from the “Snacks” list to your cart.
9. Delete the “Snacks” list.

A.2) Evaluation Instrument - Coding Sheet

Participant ID: _____

Date: _____

Observer: _____

Topic: _____

Start Time: _____ End Time: _____

Total Time: _____

Pre-Observation Questions	Notes
Describe the methods you use to shop for groceries (i.e., in-person, online, etc.)	
Do you use a grocery list when shopping for groceries?	
Roughly, how many times a month do you shop for groceries?	
How do you feel about online-grocery shopping?	

Experience ratings of the following (1 = not experienced, 3 = neutral, 5 = very experienced):
Participant's perceived experience on online shopping: ____ / 5
Participant's perceived experience on online grocery shopping: ____ /5

Tasks	Notes	Observations / Relevant Quotes
Finding the Save-On-Foods grocery list feature	Asked for Assistance? <input type="checkbox"/> Yes <input type="checkbox"/> No	
	Time:	Very easy 1 2 3 4 5 Very difficult
Creating grocery lists	Asked for Assistance? <input type="checkbox"/> Yes <input type="checkbox"/> No	
	Time:	Very easy 1 2 3 4 5 Very difficult
Adding items to the grocery lists	Asked for Assistance? <input type="checkbox"/> Yes <input type="checkbox"/> No	
	Time:	Very easy 1 2 3 4 5 Very difficult

A.2) Evaluation Instrument - Coding Sheet

Deleting items from the grocery lists	Asked for Assistance? <input type="checkbox"/> Yes <input type="checkbox"/> No	
	Time:	Very easy 1 2 3 4 5 Very difficult
Replacing items on the grocery list (Re-adding items to the grocery list)	Asked for Assistance? <input type="checkbox"/> Yes <input type="checkbox"/> No	
	Time:	Very easy 1 2 3 4 5 Very difficult
Renaming the grocery list	Asked for Assistance? <input type="checkbox"/> Yes <input type="checkbox"/> No	
	Time:	Very easy 1 2 3 4 5 Very difficult
Adding the entire list of items to the shopping cart	Asked for Assistance? <input type="checkbox"/> Yes <input type="checkbox"/> No	
	Time:	Very easy 1 2 3 4 5 Very difficult
Adding specific list items to the shopping cart	Asked for Assistance? <input type="checkbox"/> Yes <input type="checkbox"/> No	
	Time:	Very easy 1 2 3 4 5 Very difficult
Deleting a grocery list	Asked for Assistance? <input type="checkbox"/> Yes <input type="checkbox"/> No	

A.2) Evaluation Instrument - Coding Sheet

	Time:	Very easy 1 2 3 4 5 Very difficult
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Other Comments:

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Post Observation Questions	Notes
Describe how you felt during the ordering process.	

Rate the difficulty of the following experiences from 1 to 5 (1 = very easy, 3 = neutral, 5 = very difficult) and why?

How difficult was it to find the grocery list feature? Why?	/5	
How difficult was it to create the grocery list? Why?	/5	
How difficult was it to search and add items to the grocery list? Why?	/5	
How difficult was it to delete items from the grocery list? Why?	/5	
How difficult was it to add items from the grocery list to your shopping cart? Why?	/5	
How difficult was it to delete a grocery list? Why?	/5	

Post Observation Questions	Notes
Would you use this grocery list feature again? Why or why not?	
How would you compare this experience with creating a grocery list by hand?	
Can you think of other ways that grocery shopping apps could help you shop for groceries more efficiently?	