

M5

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Abstract. When someone goes to store with a shopping list, they end up going through different aisle searching for the product they want and end up wasting time and energy. My objective is to make the shopping comfortable and efficient by creating an interface which can take shopping list as inputs and then output the shortest path to shop. In this assignment I am executing my evaluation plan (qualitative & predictive), then analyzing the observation and lastly deciding my future course of action.

Q 1: Qualitative Evaluation

I executed post event protocol evaluation on my textual prototype. Total of 4 participant were recruited for this purpose. As per the plan devised in M4, total of 19 pre-scripted questions were asked to each one of the participants after they have gone through the textual protocol. I went over to their house and gave them the textual prototype and asked them to go through it. Once they were done reading the textual prototype, I started asking them those pre scripted questions. I took a note of the response they gave me for each of those questions. The session went well with all the four participants, except that it was difficult for them to use textual prototype and enact the shopping episode. I had to spend some time in explaining the whole evaluation process to them. Most of the sessions were run without any modification to the question sets. I might have modified my initial introduction based on the queries I had from previous participants. For example, the first participant just read the prototype but did not try to enact the tasks. So, I had to explain to other participants that you have to think you are doing the task and visualizing that this is the app. Notes from this exercise are inserted in Appendix A

Yes, I might change the way I have explained my textual prototype. Few questions were little similar, so I would try to remove duplicate sounding questions. I also might decrease number of questions that I would ask to the participants.

Summary of the evaluation:

1. All the four participants could understand the textual prototype
2. Different perspective from everyone, from thinking about why such app is not there yet, will it really work and trying to read and visualize what the app is really about.
3. 2 of them felt it was difficult to understand the textual prototype
4. Most of the features were understood by the all the participants. All the participants had issues with button “Stores”. One participant was not sure what Ferris wheel feature was all about
5. 3 of the participants felt they might not use this app when they are doing leisure shopping. One participant said he does not do leisure shopping any more so won’t be able to answer that question.
6. All the participant felt the app is useful to them and will use them
7. 2 participant felt that it is very useful to them when they give their shopping list to someone else to shop , for example when they give the list to their husband but were not sure how can they share the list.
8. 1 participant felt the app should be available on the store’s kiosk.
9. 2 Participants felt they should be able to name their shopping list and

Analysis of the feedback:

1. Textual feedback is difficult to perceive and understand, It is ok to have for the initial phase but not for later phase
2. Users had most issue with “store” button, unless I have some signifier or some training, it will be difficult for the user to perceive what that feature is for. This was kind of **expected** to me as I had the same doubts while designing it.
3. Users were quickly able to understand the app’s usage and how and where it can be useful to them.
4. One of the user was not sure about the Ferris wheel feature, I am analyzing that it might be because of the textual prototype. Since other 3 participants did not have that issue, I am going to give that a pass and reconfirm when I have working model of the prototype.
5. All the 4 participants felt that the app will not be useful when they are doing leisure shopping. This was **surprising** to me, as I felt the app can be useful even during the leisure shopping.
6. The summary of all feedback tells me few important take away, the interface is simple and easy to understand, user understood how app

is going to help them. It also tells me that shopping list creator and shopper might be different persons. Need a design where shopping list could be shared.

The qualitative evaluation of my textual prototype suggests following changes

1. Few signifiers around few features like “Stores” so that user can perceive it correctly.
2. Compare stores feature was not available in the textual prototype, so need to remove it
3. Add a way for user to enter name to shopping list, currently, I was auto incrementing the number and naming them L1, L2 etc.
4. Need to create a feature to forward the shopping list to other users.

Q 2: Predictive Evaluation

As per my plan in the M4, I was using GOMS method on card prototype for my predictive evaluation. I had two major task that I chose to build my GOMS model and the plan was to **time** these GOMS model for my predictive evaluation.

I have selected 2 task to do my predictive evaluation. The first task is to create a shopping list and second task is to add items in to a shopping list. For the first task, there are 2 methods and for the second task there are 4 methods. I evaluated these two GOMS model by timing each method. By comparing the total time taken for each method, I was able to evaluate these different methods.

For my evaluation execution, 10 items were added to the shopping list. For the first method of importing the file, I removed 4 items which were wrongly entered and added them using other methods. For barcoded entry, I assumed that I only have 5 bar coded items, so the rest I used voice control methods. All voice control and manual entry, all the ten items were added exclusively using respective methods only. Please find below these two GOMS models, with their Goals, different methods, operators and time taken by them.

GOMS Model 1: The Goal is to create a shopping list

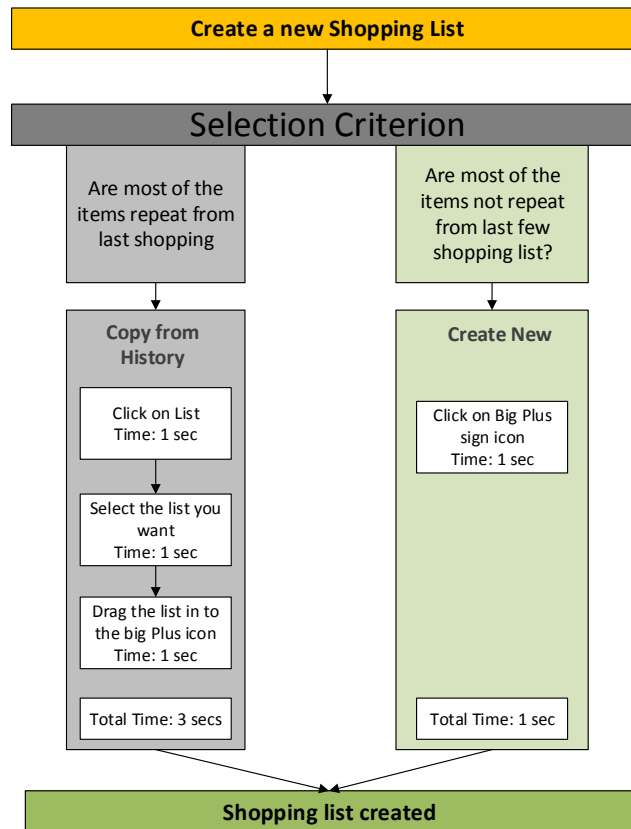


Figure 1. GOMS Model for Task1

GOMS Model 2: The goal is to add items in to the shopping list, there are 4 methods to perform this task, the figure 2 below shows all the different methods, the selection criterion, the operators and the time taken to perform those tasks under each method. Sometimes you need to use multiple methods to add the items , for example, you might not have all the bar code of items, so you would add some items using scan method and rest of the items would be added using voice methods.

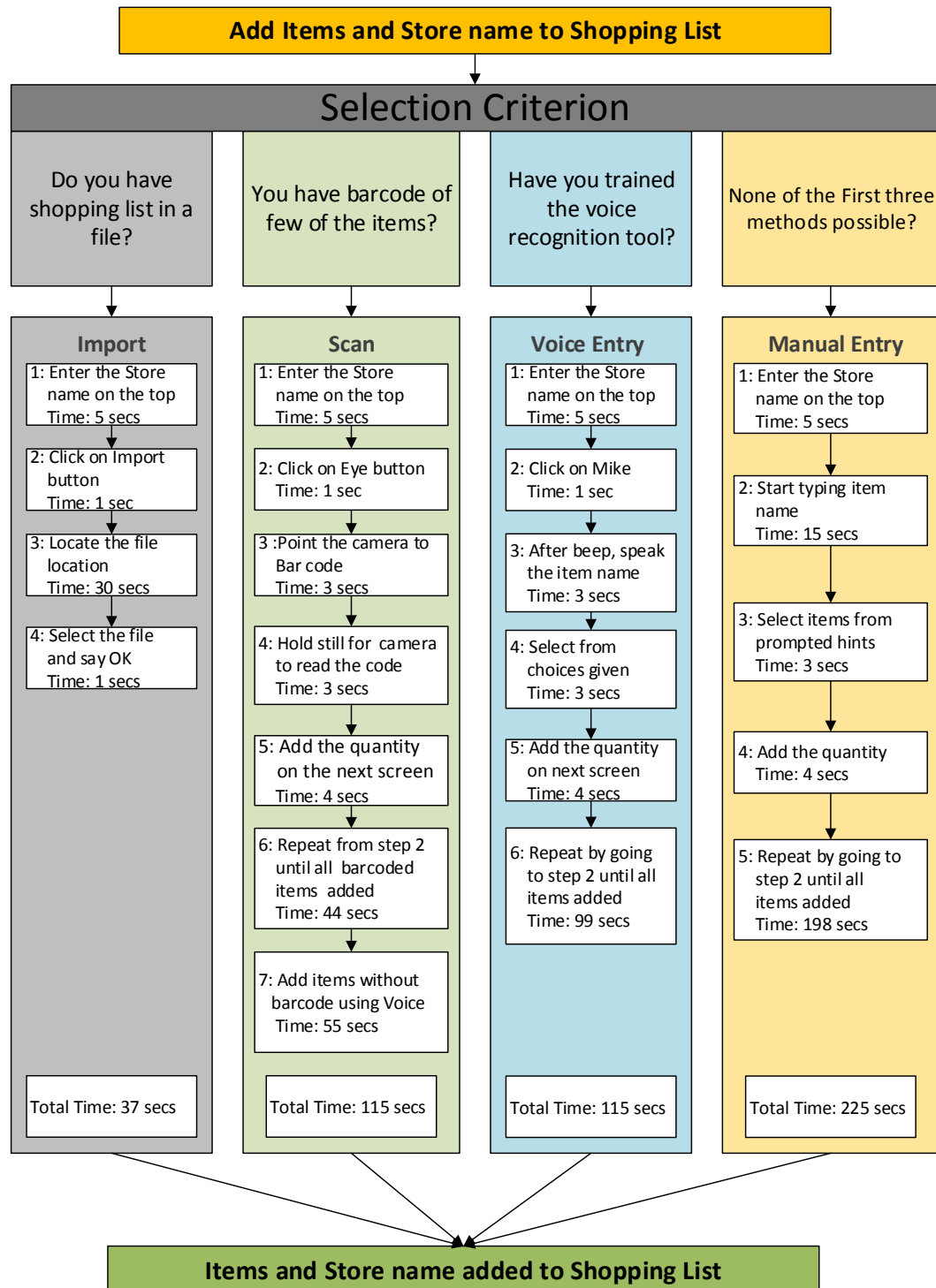


Figure 2. GOMS Model for Task2

Analysis: After timing these methods under these GOMS model, following are my analysis and observation

1. For the task1, the time taken by each method is very small and both are comparable, however, the first method (copying from old shopping list), does the heavy lifting by pre-populating lot of items in the shopping list, there by doing most of the sub-task of task2. The second method (clicking the + button), only creates an empty shopping list.
2. For the task 2, the time taken by each method were compared and first method (importing the shopping list from file) was the fastest with 37 seconds. The scanning and voice method surprisingly came second with same amount of time. The manual entry method took the longest time to complete the entry with 225 seconds.
3. Manual entry could be tedious and uncomfortable when typing long names with sizes.
4. I only had input for names and quantity but not for sizes and brand name which might be critical information for users
5. Importing a file seems little difficult and not so popular on mobile. It could be useful if it had interface on desktop. It is difficult to search for the file location on mobile and users are not used to these method.

Suggestion for Modification

1. Import function could be avoided on mobile device or could be offered from the advanced settings.
2. While doing manual entry, having a field for size and brand could help
3. Importing few items from other shopping list instead of copying the whole list could be an option too
4. Favorite items lists from the shopping pattern of the users can make things easier to select the items while creating new shopping list

Trade-off:

1. Adding too many fields (size and brand) could clutter the screen, though it would benefit if these fields are added.
2. Removing the “import” option or placing it in other advanced option can definitely help in making the interface simple. By giving too many options to user can also confuse the user.

Q 3: Evaluation Summary

Based on my evaluations, there are few design insights which came to light which I did not look in to. I need to do a better job of understanding the behavior of **users** not just during shopping but before the actual shopping. Some of these questions regarding the users are listed below

1. Do they create their own shopping list?
2. Does user shop using their own created shopping list or do they shop on shopping list created by someone else? Example Husbands being asked to shop for a list prepared by their wife.
3. Will the app be useful to professional shoppers who shops for their customers
4. What are user's challenges when doing leisure shopping

I would do **additional need finding** exercise to better understand the above mentioned queries. I would do **Interview, Survey** and **Participant** need finding exercises. I would also include store employees in one of the need finding exercise to understand their perspective.

During the Needfinding exercise, question arose what happens if the user forgot his smart phone? Can he download the navigation at stores? Will the stores share their store navigational coordinates to third party app developers? These questions made me to decide that I should also add a **new design** alternative. This design alternative could be used to mitigate the risk of stores not sharing their navigational coordinates to third party app developers. The design alternative will have following features

1. It will be two module design, one will be on the user's mobile and other module will be in the store on some kiosk/workstation
2. Users module will have interface to create the shopping list and other features
3. The Store module will have feature to sync with user's interface to import the shopping list and then export our the navigation back to the user's module

Based on these evaluations and questions that popped up, my current prototype would also need modifications. Here are few changes that came up through this exercise

1. Add a feature to share the shopping list using email
2. Add a feature to share the shopping list using WhatsApp
3. Add a feature to import the shopping list received via email or WhatsApp
4. Add a feature to custom name the shopping list
5. Choose a proper signifier to “Store” button to have better perception
6. Remove the “Store” button if it is not very useful to decrease the clutter
7. Move “Import” from main screen to advanced settings

Based on my brainstorming, I would still keep my prototypes at **low fidelity**. Adding to the fact that I am adding a new design alternative, keeping the prototype at low fidelity will help me getting rapid feedback with little efforts in modifying these prototypes. Even on the current prototype, the feedbacks were both positive and critical. Hence, it will make more sense to incorporate these feedbacks in the our prototype at the lower fidelity prototypes like textual or card prototype so that we can go back to users and get their rapid feedbacks. Adding a feature to share the shopping list with someone else could be added pretty quickly on my card prototype. I can also have more information to formulate my survey questions, for example, I can now ask users if they need “store” button to sort list by stores on the main screen. If the survey analysis tells me that it is OK to remove it from main screen, I will remove the “store” button from the main screen to remove some clutter. This is how I am going to take care of some critique from this evaluation cycles.

I am planning to do **qualitative** and **predictive** evaluation for my next design cycle. Qualitative feedback can get detail feedback from user if those critiques from previous evaluation cycles are taken care of in this version. Predictive evaluation also help me a lot while trying to get a rapid feedback on my new design alternative that was introduced in this phase. I will NOT be doing any empirical evaluation yet since my prototypes are still in low fidelity and not yet functional. Without being functional, it will be difficult to perform true empirical evaluation on the prototype. I would rather get more qualitative feedback first using low fidelity prototype before moving in to high fidelity when I can use empirical evaluation.

References

1. Prof Joyner Video at Udacity
<https://classroom.udacity.com/courses/ud400>

Appendices

1. Appendix A: Notes from Qualitative evaluation

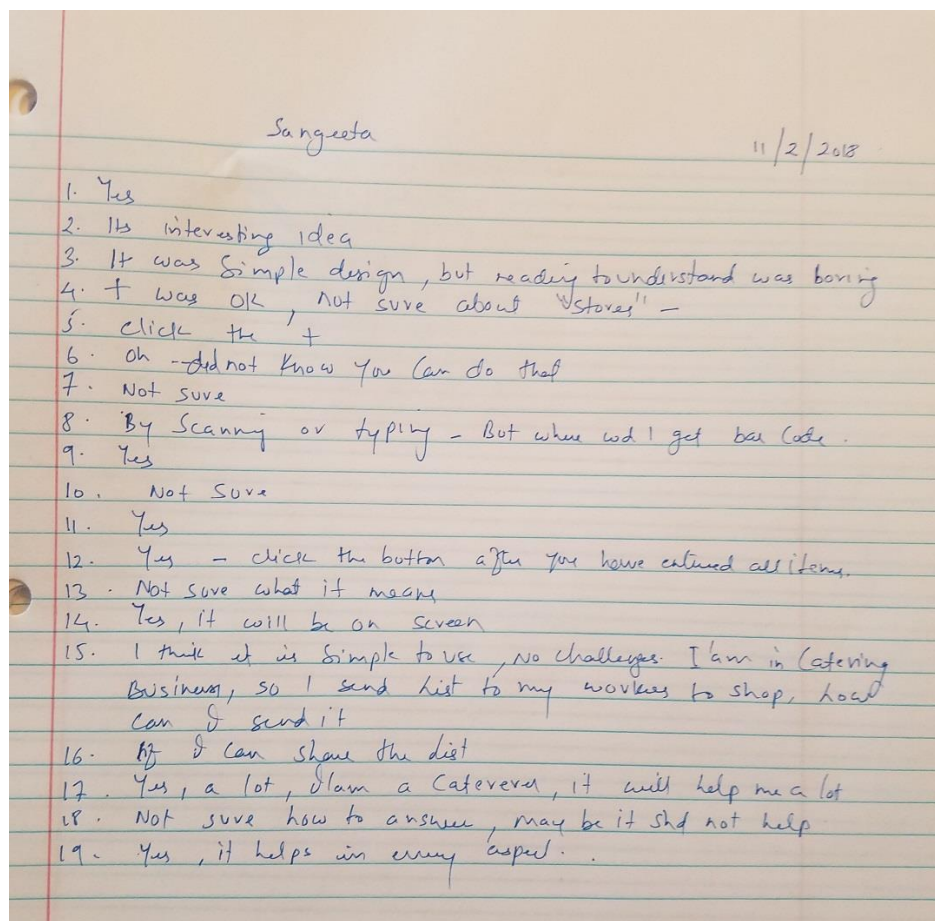


Figure 3. Qualitative evaluation notes - 1

Suresh

10/31/2018

1. Yes
2. Well nothing in particular, just trying to read & understand
3. Nothing in particular
4. Yes, but "Stores", does it bring nearby stores that I have shopped recently
5. Yes
6. Yes, By dragging old list
7. Not sure, &
8. Yes by bar code scanner or copying old list
9. Some button at the bottom part of screen
10. Not sure, did not read
11. Yes, some info at the top of screen
12. By clicking the button at bottom
13. Not sure
14. It will be displayed at top
15. Looks simple to use, not sure if I can send list by email
16. Not sure - what if I forgot the phone, will the stores have some block to check navigation
17. It will help me a lot, most by the list are prepared by my wife so navigation part will help me a lot
18. I never do leisure shopping - so not sure how to answer this Q.
19. It does help, for me, Navigation is the best

Figure 4. Qualitative evaluation notes - 2

Poofa

10/31/2018

Notes -

1. Yes on a high level.
2. Really if app like that can be available
3. Simple design, Mostly able to get it
4. Yes, it was OK, Can you explain "stores"
5. Yes, Can create new list by +
6. Not sure how to copy from old list
7. No
8. Yes, I can delete
9. Yes, I know
10. Not sure
11. Yes I can
12. By clicking button in bottom
13. Clicking on --- sorry, I think it will prompt you if items not available or I do not think I have to do anything
14. Some info at the screen
15. Overall - OK, not sure what was Favis what is all about
16. Not sure, Looks like the app has everything
17. help me create shopping list & for shopping too.
18. No, Not sure
19. Saving my s list (old)

Figure 5. Qualitative evaluation notes - 3

Shweta

11/1/2018

Notes

- 1) Yes she is able to understand what the app is
- 2) Trying to understand overall scenario of app.
- 3) Difficult to read textual desc + understand everything
- 4) Yes, + & list was ok, Not sure about "shoes"
- 5) Yes, using it or copy from old list
- 6) Yes, as explained in previous question.
- 7) Not sure
- 8) Yes, by scanning or manually typing
- 9) Yes, there will be some button at the bottom
- 10) Not sure
- 11) Yes, there will be some notifications on the top of screen.
but not sure how it is displayed
- 12) Repeat question
- 13) I think when item not available, it will prompt
- 14) User was not sure
- 15) Design seems simple, but textual desc makes it difficult to visualize.
- 16) Meaningful names to list, also if size can be entered too as field
- 17) It will be useful when I send list to husband for shopping.
It will also make my task easy to create shopping list
- 18) Not sure if I will use it when I have ample time.
Generally I do leisure shopping in departmental store &
I do not make list for these stores
- 19) It will be useful for grocery shopping but not for kohl's or
S.C. Penney.

Figure 6. Qualitative evaluation notes - 4