Easy2Buy

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# Abstract

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**Abstract:**

In this paper, we are presenting an idea which makes the grocery shopping easier. The primary goal of our project, Easy2Buy is to provide lane numbers of various products the user selects in a sorted manner. Time is the major constraint in today’s world. People are busy at work and are hardly finding time to shop. Having said that, we can understand the situation the time people When it comes to grocery shopping one can imagine. The problem that the customers are facing today is time scarcity. In this business world, people are hardly getting time to go out for grocery shopping. We are addressing this problem by providing a solution that will sort the lane numbers of all the items the user selects. This will not only save a lot of time for purchasing the products they want and enjoy their shopping as well. Easy2Buy is targeted at searching for an item in a big store. Few people often forget to prepare or carry a list. Our project will allow the users to make a list and save it for future use.

**Introduction:**

Grocery shopping is an inevitable chore. Today to shop for groceries, the customer should push a cart up and down the lengthy aisles of the supermarket in search of the items on the list. Although there exist sign boards that could help them with the shopping, finding the board itself takes a lot of time. This would frustrate the customers at times. So why not we try to make grocery shopping easier, faster, and less stressful?

Our application is a user centered design which was developed by keeping the problems pertaining to current method of shopping in mind. The application provides solution to the problem addressed above by helping the customers shop in less time.

Unlike the current way of shopping, with this application in hand, the customer can directly head to the sections he needs without having to roam the entire store. Once the customer is ready with the list, he will be provided with two options that saves his time to shop one being the lane numbers and the other being blue print of the store. Former option will link all the lanes where items on his list would be found in a sorted order and by making use of the latter option, the customer can directly head to the lanes displayed to grab the items.

This section presents an overview of the articles related to consumer’s grocery shopping behavior. The intent was to acquire general overview of grocery shopping as such why people shop, how do they shop etc. Park et al., (1989) suggested that store knowledge and time available for shopping are the two most important situational factors that affect the consumers’ grocery shopping behavior. They concluded that increased levels of unplanned buying, minimization of purchase failure rates, minimization of postponement of purchase, and improvement in the quality of purchase volume decisions are important factors in increasing store revenue. However, these results cannot be generalized because of their experimental protocols. Abratt and Goodey, (1990) suggested that manufacturers and retailers in industrialized countries spend large sums of money to promote impulse-buying and studied the role of culture in unplanned buying at supermarkets in United States, United Kingdom and South Africa. The results indicated that unplanned buying is higher in United States compared to South Africa. However, Thomas and Garland, (2004) concluded that supermarket retailers could benefit by supporting shoppers’ pre-planning, and thereby increasing their share of custom through a study on scripted behavior among customers in New Zealand.

This suggests that impulse-buying may increase the revenue of the supermarkets to some extent in the short term. But, in the larger scheme of things, encouraging planned buying may build trust among the customers and promote repeated visits helping in forming long and sustained customer base.

**INVESTIGATIVE RESEARCH**

For our initial research we have interviewed five people in the Walmart. We have prepared some demographic questions and some applications related questions for the interview. These interviews are semi structured interviews.

Firstly, we observed the people in the bigger stores like Walmart and Smiths for one day. There we found that some people we carrying list on paper and some people were carrying the list on mobile and some people were not at all carrying any list and shopping by roaming around the whole store.

Secondly, we started interviewing the selected people. Before interviewing the people, we have issued the Letter of Information to the interviewers which give the detailed information about the interview. Then we started asking demographic questions and then slowly we started asking the application related questions. We tried to complete the interview within 30 minutes where some interviews are completed within 30 minutes some interviews took some more time.

We have collected all the information by recording the voice using Easy voice recorder android application and we took a rough note on a paper regarding the interview. Then we consolidated the information gathered from the semi structured interviews and observations. The type of data that we collected from various interviewees are whether they carry the list or not, how do they prepare lists, what difficulties they face during grocery shopping and possible solutions, how do they find their desired products, what process they follow when they don’t find their desired products, etc. The excerpts that we found interesting are that majority of customers prefer to make lists before shopping, they prefer to seek help from staff employees when they don’t find their products, a route map is needed which can help them to save a lot of time.

Some of the few interesting findings we found while observation and interview are 1) The first interesting finding is that Four out of Five people who shop at various groceries stores prefer to make lists and then go for shopping. So, we are adding a feature which enables users to make a list. 2) To find the desired products, few people need a route map that can lead them to their desired products at a very less time which can help them save a lot of time. So, our application is embedded with a map that can lead the users to their desired products at a very less time. 3) Few people felt like, sign boards are displaying only broader categories rather than description of every product in that lane. So, we are adding description of the items in our project. 4) When the queue for billing is big, people will get tired and irritated. So, this feature is not considered in our project. 5) When people are in a hurry, they often don’t check the expiry of the products and tend to buy the products without giving much attention. So, we are implementing this feature indirectly by helping the customers in finding the items in less time so that they can allot sufficient time looking at the features of the products like expiry date and so forth.

**Design Process:** Designing of our prototype included various stages like identifying personas and scenarios, designing goals, a cognitive walkthrough and usability testing. After collecting data from all the steps, we concluded our findings and proposed changes to our existing prototype.

**Personas and Scenarios:** We conducted various researches to check what all age groups of people can help us to identity the important aspects in our prototype and will allow us to rectify them. After discussing various permutations and combinations of all the age-groups of people, we decided we will interview college going students as they were ideal fit for our project because they could give enough information about shoppin-related queries. So we interviewed five students from whom we thought can accumulate all the tasks that we had in mind that would cover all the important aspects of our project. We identified three personas which helped us to cover every detail of our project. First persona was a student who goes for grocery-shopping on a weekly basis, second persona was a student who likes to shop and shops quite frequently and third persona was a student who hardly finds time to shop because he was very busy in his coursework. Figure 4 is about a PHD student who is very busy and goes for shopping on a monthly basis.

Design Goals: Based on the different categories of personas, we were able to postulate different context-related scenarios which helped us to formulate design goals that are essential to our prototyping: 1. Our solution to reduce burden of people’s shopping should be a simple application that can help everyone to create and edit list of items that they want to shop very effectively and easily. 2. Our solution should allow customers to see the lane numbers in a sorted manner which will help to roam effectively around the store. 3. Our solution should be a application which will help people to navigate around the app without having any problems. 4. Our solution should also allow people to visualize a blueprint of the store so that they don’t get stuck anywhere in the store and will know where the lane numbers are actually located.

Cognitive walkthrough: Our formulation of design goals helped us to build a initial prototype. But for testing our prototype, we needed to test it among various users who would help us to find the problems in our prototype. Usability testing helped us to identify problems underlying in our prototype which led to bringing new changes of the prototype. Cognitive prototype identified problems that were needed to be solved for task completion: 1. Everytime, people had to add create a new list rather than using their previously created list. 2. There was no login options using google or Facebook where people generally have a account and people normally use these options to sign in. The cognitive walkthrough also identified potential problem areas with our initial prototype. We didn’t use already existing icons that are available in the real-world which created confusion among various users. Also there were no proper link between various pages as different pages led to somewhere that was not needed.

Usability Testing: After successfully completing usability tests on various users, we developed a prototype that covered all important aspects covering issues faced by customers. We developed this prototype in proto.io. Using this prototype, we conducted usability tests along with think aloud protocol with seven customers from age group of 18 to 45 years old. Main focus of these usability tests was to identify whether users were happy with the prototype and whether they were able to complete their tasks without any problems. The activities that were given to users were to check logging in to our application, creating a list, editing a list, checking lane numbers and map of various products items in the created list.All the participants were successful in completing the tasks that were assigned to them. We understood what they are doing as they were using think aloud protocol. Our prototype was quite clear of what each icons were meant for and how each page can be navigated. Some of the problems that users faced were identifying sub-categories of same product. There was confusion between users when they had to select a product and sub-product was not available for them to select. For example, there are different types of chilies like red chili, green chili, cheddar, pepper, etc. So for these type of products, only chili was present. This created problem among users. To address this issues, we are planning to change our existing prototype by adding sub-products to the existing available list which can help the users to select sub-categories of the items as well. Some of the behaviors that our users exhibited demanded changes in the final stages of our application where people were using map to guide through the store. Our application had “Map” functionality which contained blueprint of the store that the user was conducting their usability test. It helped users to know where the lane numbers are actually located in the store and will help them to know where the products are. The problem lying with this design was that user was not knowing what location he was actually present which created a problem for the user to navigate through the store. This was a major concern for our application. These behaviors suggested that there was a bigger problem as users were able to see the lane numbers in a sorted manner but were not able to navigate through the store effectively. We therefore are including a new feature into our application which will help the user know where they are currently present in the store. We are considering using GPS location inside of store which will indicate where the items that users want to purchase are actually located and help the users know about it and their location very conveniently. In addition, we will add a feedback section which will help us to know about the opinions of various users and the problems that they are facing while shopping which will help us to improve our application.

Based on our research findings and user study, which comprises of semi-structured interviews having demographic and application related questions and observation for the users at different stores, we design and sketch on paper i.e. low fidelity prototype and story boards[ref image]. Focusing on the reliability and feasibility of application and to cater the usability goals, the functionality included was to create, edit and delete list and also shows the lane numbers of selected item in the list created by a user. The main screens are: selecting categories for creating list, edit list screen, and lane numbers or store map of the selected store which assists the user to collect or pick items in less time. Various cognitive walkthrough iterations were done to uncover the user study and usability issues, for instance, based on one of scenario, functionality for sharing list is included [ref image]. After testing with users, results and findings for the study of think aloud protocol, we iterated further to clarify design principals to design and implement high-fidelity prototype.

Design description

The application has functionality for choosing the nearest store based on pin code by selecting through the list and also there is an option for the user to view the stores for any particular area by entering the zip code of that area [ref image]. After selected the store the user is directed to a screen where the user can view the previously created list if the user is returning user and also an option for creating a new list is provided. After clicking the icon for creating new list goes to choose the category like milk products, fresh products (fruit, vegetables) etc screen for selecting items to create a list. The list created by user remained saved in the application which can be used by the user further by providing the functionality of editing it or by sharing it with anybody by entering the person's email id or phone number. Additionally, the user can also view or take reference of the previously created lists of the different stores that are stored in the application for creating a new list.

After a list is created the user has two options: user can follow the static lane map of the selected store depicting the lane number, cash counters, exit gate, self-checkout machine area that facilitates the user to save time while shopping, particularly the user who shop in hurry. The second option is user can get the screen showing the lane numbers of the selected list in the sorted order to reach out to the items in lesser time.