Grassroots: A Local Online Community for Farmers and Consumers

Lo-to-Mid Fidelity Prototype Testing and Refinement

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Problem/Solution Overview

Farmers who supply large grocery stores often speed up and artificially enhance the production of their produce in ways that can lead to harmful side effects including cancer [1]. Local organic food is one method to get fresh fruits and vegetables that have not been genetically modified in dangerous and unnatural ways while also contributing to the local economy. However, many organic food growers do not have storefronts; they sell through online orders and grow in popularity through word of mouth. Other organic growers only have roadside stands and have no online presence at all. In order to promote local organic produce, we propose a website on which local organic farmers can create an online presence for themselves and their produce. Our goal is to create a website which will allow local organic farmers to sell their produce online while enabling consumers to buy, view and rate local organic produce in their area. In addition to this, our website will also contain community information, such as local farmers markets, which can be contributed by both local farmers and consumers. Our goal is to make the buying and selling of organic produce more transparent while still providing useful functionality to the user.

Prototype Description

After iterating on many different designs and sketches, we have created an interface for our system which we believe will help make the buying and selling of local organic produce much easier. One of the main ideas behind our interface was to make the steps to perform the task as obvious as possible. We believe that this design principle is important because many existing sites that provide similar services have cluttered interfaces that provide far too much...
information to the user and obstruct the completion of the task at hand. After speaking with Ethan Schaffer, an expert in the “e-food” industry, we learned that clutter and poor usability plague many existing sites in the space; therefore, this was something that we were wary of, particularly in the redesign of our interface.

This simplistic design principle can be most readily seen in the interface of our home page (Figure 1). Our homepage consists of simply a search bar which will allow users to search for specific types of produce and farms. By using just a search bar on the homepage we have eliminated excess stimuli which might distract a user from completing the task that they wish to perform. A suggestion appears inside the search box which indicates that the user can enter the name of a produce such as “blueberries”, the name of a place such as “Maryland”, or the name of a farm such as “Millstone Farms”. This suggestion disappears once the user clicks inside the search box to begin typing. Once the user presses the “Search” button or the carriage return on a keyboard, the search results page will appear (depicted in Figure 2). The user will also be able to refine the search results according to ratings, location and price using the dropdown menu.

In addition to searching for items, we have also designed our interface so that the buying and rating of products is simple and straightforward as well. After search for a type of produce or farm, a user will be able to choose from a number of different farm pages. Each of these farm pages will include basic information about a farm which includes its location and average produce rating. The farm page (Figure 3) will also include the product information for the farm and will allow users to view and rate products as well as add products from that page to their “cart”. The interface for these pages is easy to navigate and includes existing models that users should be familiar with in order to allow a user to perform tasks with a minimal learning curve.
Testing Method

Participants

In order to perform usability testing on our interface designs, we chose four participants whom we felt would reflect a random sample of possible users of our system.

1. The first participant that we chose was Matt D. Matt currently buys organic produce from MOM’s organic market and Whole Foods markets. However, Matt has never bought produce online before organic or otherwise. Also, Matt is not a technical user but is familiar with how to use computers and how to navigate and use websites. As a participant, Matt portrays a user who has bought organic food in the past but has never bought organic produce online. Therefore, his situation reflects that of many of our possible users.

2. The second participant, Zhwei Z. is in his mid 20s studying agriculture business at the University of Maryland. While looking for our participants, he was randomly selected in school cafeteria. Zhwei, seemed to be a good fit for our user testing because he had prior experience of buying local produce online from some Chinese grocery websites. Also, he seemed to be moderately tech savvy who enjoys online shopping but is unsatisfied with the interface design of the websites he has visited in the past.

3. The third participant in our user testing, Alyssa S., is an administrative faculty member at the University of Maryland. Her educational background is in psychology, community organizing, and social work. While she uses technology as part of her job (Microsoft Word, Microsoft Excel, Internet Explorer), she does not consider herself highly technical in nature.

4. We discovered our last subject Gi P. while looking for participants, he was the friend of fellow student (in a class unrelated to CS). Gi Pak is currently a retail employee at a clothing store, and a part time student at Anne Arundell Community College. He explained that he does shop online frequently but does not spend much time on the computer, other than for social networking and shopping. He does not have experience buying food items online, but claims that his family often buys local produce.

Study Environment

1. Matt: The tests were performed in the living room of Matt’s house. During this evaluation, Mike was the facilitator and Jee was the observer.

2. Zhwei: The tests were performed in school’s cafeteria with Prabesh and Jee present. While Prabesh facilitated the tasks, Jee observed Zhwei’s interaction with the interface.

3. Alyssa: The tests were performed in Alyssa’s office with Vineet and Mike present. During this evaluation, Vineet was the facilitator of the tasks while Mike was the observer.

4. Gi: The tests were performed at Howard Community College in a study room located in Duncan Hall. It was a closed room with one big table and desk chairs. The participant sat on one side while Jee administered the instructions and mockups and Vineet sat across from Gi making observations and taking notes.

Tasks

We asked our users to perform three tasks. In the first task, we presented the user our homepage with a search bar, and asked them to enter a value into the search bar and trigger the search results. In the second task, we presented the user a page of search results and asked him or her to rate a particular item; this task implicitly involved navigating from the search results page to the farm’s homepage, which contained the rating mechanism. The third task
involved a more complex search; the user was asked to find the highest rated blueberries in his or her area and add a certain quantity of this item to the cart.

Usability Testing Procedure

Before we began our usability testing, we first created a procedure that would be used during the testing process with each of the participants. The first step in the procedure was to explain the purpose of our system and what it was meant to do. Once we explained that information to the participant, we then gave a quick overview of the interface which included where they could “click” and where they were able to write information. The next step was to have the participant begin performing the tasks associated with our project. The users were asked to speak their thoughts out loud as they made progress through the tasks. As the participant completed each task we took notes on whether or not they had any issues or if they especially liked or disliked something. Once the user had completed all of the tasks, we then spoke to them about our interface and asked if there was anything that they would like to see added or changed.

For each usability evaluation, the print outs of our Balsamiq mockups were placed on a table in front of the participant (one at a time) as they completed the tasks. Using this series of pages we were able to simulate how a website might progress from one page to another.

Usability Test Measures

While our participants were performing our tasks the observer in the experiment took note of any events that they felt were important. During the testing, we were mostly focused on whether or not the user was becoming confused about a task or if they did not know where to begin. We also took note of any comments the participant made during the testing, especially if the comment was about a like or dislike in the interface. Lastly, we took note of how long it took for each participant to perform each task. If the participant took an abnormally long time to perform a task, we spoke to them afterwards to determine what we could do to make the task easier for them to perform.

Testing Results

After performing the usability tests with the four participants we received useful information which helped us to refine our prototype.

Easy Task (Search)

One of the main points that was common among all of our participants was they they liked the simplicity of our homepage. All four of the participants were able to search for a particular type of produce without any issues and found the search bar to be simple and self explanatory.

After arriving at the search results page, Alyssa was unsure of where to click after arriving at the search results page. Two of the participants did mention that they would like to see a visual representation of the location of the individual farms in the search results.

Medium Task (Rate an item)

The part of the usability testing where users had real issues was when performing the rating task. All of the users were able to successfully navigate back to the correct farm page after they had bought an item but had difficulties actually adding a rating for the item that they bought. Many of the participants suggested adding a button where the user would be sent to a different page to add a rating and or a comment. In general, all of the participants felt that the rating task should be more transparent so that users can add a rating to an item easily.
Difficult Task (Search by rating and add to cart)
Once the participants had selected the correct farm from the search results page all of them were able to add a certain item to the cart and check out without any real difficulties. However, Matt did mention that he would have preferred to use a drop down box to select the quantity of an item as this is what many websites currently use. Alyssa mentioned that she felt that she was adding items to the cart blindly, without feedback. She said she would have felt more comfortable clicking "Add to Cart" if she knew that the item had successfully been added afterwards. Gi commented that he liked the simplicity and cleanliness of the interface.

Interface Revision

Search Results
In our search results page, we took our users’ advice and made the page more visual. One of the most significant changes is the addition of a map which is visually paired with the list using the yellow circles from the enumerated list. We also modified the list itself to make it more apparent that each farm was clickable. We did so by making each search result a clickable button (with visual depth cues) as well as using a blue hyperlink for the farm’s name rather than black static text.
**Farm Page and Ratings**

The biggest source of confusion on this page was the rating mechanism. In our original mockup, it was not apparent how to rate an item. After showing our confused users how the rating mechanism worked, some expressed confusion between the site’s rating and one’s own rating; or original design overwrote the website rating of the produce with the user’s rating in-line. Our new design shows a clickable set of stars with the website’s rating of the produce, and brings up a popup once clicked to allow users to rate the item themselves.

**Search by Rating and Add to Cart**

Users performed the first portion of this task quite well; searching was similar to the first task, and sorting by rating was performed using a clearly visible dropdown menu on the search results page. The second portion of this task, Add to Cart, was also performed well but yielded some suggestions from our users. The two main suggestions were to make the shopping cart more visible while browsing the website, and changing the “quantity” number selector to a dropdown rather than a numerical field with up and down arrows to improve ease and speed.
Discussion and Summary

After completing all of the user testing, we pooled our results together and determined what key issues needed to be addressed. Overall, we found our usability tests to be very useful in pinpointing usability issues, ambiguous areas in our interface, and general thoughts about our interface. The issues that arose helped us to better our prototype and improve ease of use.

One issue which was brought up by our evaluators was that the task of rating an item was not transparent. Because all of the participants felt similarly on this issue, we revised our interface to make rating easier and more transparent to the user. Another interesting point that was brought up by some of our participants was that the search results page of our interface might benefit from adding a visual aspect to it. We realized that this was a good idea and included this change in our prototype as well. Overall, we felt that these usability tests definitely helped to discover issues in our design as well as better it in the long run.

However, even though we felt that our usability tests went well, there is always room for improvement. One way to better our evaluation method for the future would be to have experts perform heuristic evaluations of our interface. By having more people evaluate our interface, we would be able to better identify common issues with our design. Another way to better our evaluation method for the future would be to improve the fidelity of our during our evaluation. Performing an evaluation with a higher fidelity prototype would enable us to eliminate issues in
our results stemming from a lack of visualization or instant user feedback, such as the issue where a button item did not appear to our users to be clickable in nature.

Finally, during our user testing, we were able to gather some new ideas for tasks that could be performed with our website. Alyssa suggested that she would enjoy being able to enter the name of a recipe or dish into our system in order to find local farms that carried the required ingredients. In order to visualize this task for our future use, we created a mockup which can be found in Appendix C.
References


Appendix A: User Testing Notes

Gi P:
- User mentioned that the interface reminded him of a google search
- Was able to search easily
- Really liked the minimal interface, however did mention that (specifically in the search results) that it was a bit “boring”
- Did not have much trouble ordering, once he saw that there wasn’t a way to buy through the search page, he clicked on a result and found the “cart” on the farm page.
- Commented that he thought the “cart” should always be visible
- Had trouble rating, he tried clicking around, and once he saw that stars were visible, he clicked on the stars and (seemingly) coincidentally found out that he could rate by clicking on the stars.
- Commented that he did not like this, and felt that there should also be a way to comment
- However, not sure if this preference is due to the paper prototype, it might be different on the computer.
- Liked that he could buy and rate single produce since his family eats a lot of watermelon and strawberries during the summer and he would like to be able to find the freshest fruits.

Matt D:
- Was able to perform the tasks without any real issues.
- The only task that wasn’t 100% clear to him was the rating task.
- Thought that an extra page was necessary to add a review/post a comment.
- The extra page would also make the rating process more straightforward.
- Maybe use a drop down button for choosing product quantity as this is what most sites use currently and many users will be used to this type of thing.
- Liked the simplicity of the site, thought that things weren’t too cluttered which can be an issue with other sites.
- Maybe add something that would allow a user to compare a specific product with others from nearby farms( such as price, location, selling quantity like in lbs vs. ½ lbs).

Alyssa S:
- Found search bar page clean and simple and self-explanatory
- Was overwhelmed by search results, would prefer some sort of visual indication that they were local results (such as a map)
- Did not know where to click to purchase items from the search results page
- Once on farm page, add to cart process was simple
- Didn’t understand how ratings worked. Perhaps make this more transparent
- Liked shopping cart page and segmentation of produce
- Suggested a way to search for multiple types of produce for a single “recipe”
Zhwei Z:
- Was able to perform the tasks without much trouble
- showed little bit concern about the listing of search result, recommended a more clear view of the search result list
- liked the idea of the rating and the clean cut design interface
- commented about the checking out from shopping cart: “speaking from my personal experience, delivery of grocery products is hard. If there is a delay on delivery (for situations like bad weather conditions), products can go bad and the user might lose interest from buying online. That happened to me. I received non-fresh product due to delay and I barely buy food products online now”.
- I asked “how would you rate this interface on a 1 to 10 scale, 1 being very poorly done / useless and 10 being best interface seen so far?”. His answer: “I would rate it 8, as I haven’t seen a clean cut interface as this before. But there is still room for improvement.”

Appendix B: Demo Script Guidline

*Participant’s Name*, thank you for volunteering to participate in our user testing. You are free to undisclose any personal information and may opt out at any time, please clearly let us know verbally if you are uncomfortable with sharing any information.

As you may have heard, most store bought produce contain chemicals in order to preserve or enhance the foods, and we believe that local produce is the way to go. With local produce, you are able to buy the foods straight from the source. This ensures that no chemicals have gone into the foods and that you are getting the highest quality product.

Our project is called Grassroots. Our aim is to make it easy for both experienced and first time users to buy local organic produce online.

We will be using paper prototypes (*Show balsamiq mock ups*) and you will be instructed to do three different tasks. During each task, please voice your thought process aloud as you are completing the task and be as honest as possible. Express any critiques, good or bad. Feel free to ask questions before each task but please refrain from communicating with us directly during the tasks.

*Explain the three tasks at the right time, showing the homescreen each time:*

1) Search for a product of your choice.
2) Assuming you have just bought what you have searched for, give it a rating of your choice.
3) Search for a product of your choice that has the highest rating, and purchase it online.

RECAP: What did you like/dislike about our interface? Any suggestions?

Once again, thank you for participating.
Appendix C: Mockup revised prototypes

Fig: Search by Recipe Mockup
Fig: Search By Recipe Ingredients Results