

CS 449 Final Report – The Potatoes

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SECTION 1: PRODUCT DESCRIPTION

1.1: Problems and Target

Our project is designed to help local businesses obtain customer feedback. Thus, the market segment revolves around the local businesses and their users. The high-level problem we face revolves around a persistent difficulty for users to be motivated to provide feedback for smaller businesses. It is simple for large franchises to receive a ton of exposure and hundreds to thousands of reviews, but local businesses may struggle to crack fifty. The most important contribution to this segment is to somehow convince others to contribute: that is, to incentivize individuals to provide feedback.

We plan to tackle this issue by bringing the businesses and users closer together; we believe that there is immense value to building a channel where customers and businesses can interact and help each other. Users will provide their feedback to businesses, and they will try to make things right. By going through this channel that we have created, it helps to keep both users and businesses accountable in ways that direct contact may not. A business can't ignore a customer or it will reflect poorly on their image, for example.

1.2: Goals & Hypotheses

In designing our solution for this problem, we had a set of goals and hypotheses that we wanted to put to the test. Throughout the design lifespan, our goals and hypotheses were modified and expanded in order to accommodate the new information that we gathered, but the core concepts remained the same. Here is a summary of the problems we originally identified and carried through the design process:

- People have different motivators, and it is important to identify what the most prevalent ones are
- Users will tend to review negative experiences more than positive ones, which leads to imbalance and misrepresentation
- Users tend to ignore average experiences, because they probably don't think they are worth writing about

Our main goal was to incentivize users to write, not only about extreme circumstances (very good or very bad), but about every situation. If it is possible to motivate a user to write about their most average experience ever, then it naturally extends that they will probably write about anything: that was the crux of our focus. The following diagram that relates user effort and their willingness to provide feedback exemplifies our goal:

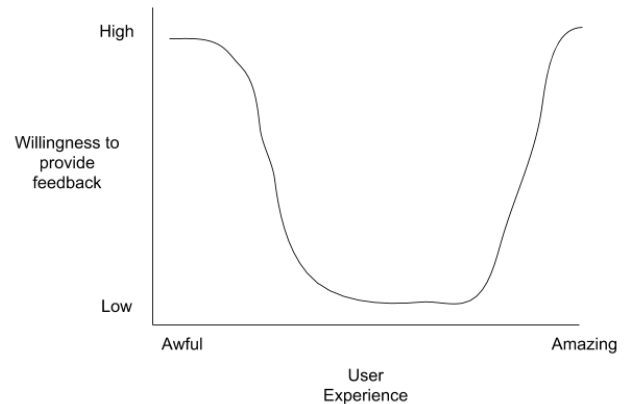


Figure 1. Effort vs Indifference

This diagram has been referenced numerous times in our progress reports, because it is an identified problem that most strongly related to our goals and has been persistent throughout our entire development process.

1.3: Focus & Purpose

We aimed to address the issue of motivation through a variety of incentives granted upon a review. Throughout the design process, we had various ideas on what the incentives should actually be. Even now, with our prototype essentially finished, things are subject to change based on continuous feedback. However, we came to the conclusion that there should be two main rewards: singular rewards upon leaving a review, and persistent progress that rewards users who interact and review consistently. Singular rewards will be our most popular, and aim to provide an easy way for people to feel like their words are worth something. If they continue to interact with others and speak with the local business, then they will be further rewarded for their repeated behaviour. This will hopefully foster a sense of usefulness in the user, and motivate them to do similar work in the future. We found out that a lot of the time, users did not write feedback because they felt like it was insignificant. By showing them that their words mean something, they will feel a sense of purpose and may even carry their actions in the future without incentives.

SECTION 2: ANTICIPATED USERS

In contrast with some of the other problems addressed by groups, we felt that our project had a slightly different definition for the term ‘users’. Ultimately, we wanted local businesses to adopt our application and be identified as the users, but it was more important for us to study actual customers that provide feedback in order to optimize the kind of information that these local businesses would be receiving. Plainly speaking, we have local businesses as the users of our application, but we felt there was more value in studying the customers. Although local businesses can be vastly different, we felt that they all have similar goals and personas, which, simplified, is obtaining feedback and reacting accordingly. By focusing our studies on the customers, we were able to tailor our solution in a way that allowed us to maximize the chance of customers leaving feedback, which thus helped out our users in the process. With this in mind, we created several personas, with some being modified afterward upon assignment feedback.

2.1: Personas

Jenny (Intrinsically Motivated Customer):

- Ambitious writer/blogger that likes trying out new things
- Motivated by exposure and acknowledgement
- Often willing to leave a review on her own time - any compensation is extra benefit

John (Unmotivated Customer):

- University student who is lazy
- Goes out often for food, but does not really care about providing feedback
- Will be motivated if there is an incentive to do something

Kurt (Unconditionally Unmotivated Customer)

- Farmer who is very busy every day
- Very bleak outlook on life
- Does not care about incentives at all

David (Small Business Owner):

- Eager mind who wants things to succeed, open to anything
- Motivated by potential to improve and customer satisfaction
- Making people happy is his goal, even if it means accepting blame

Janice (Large Business Owner):

- Industry veteran and carries a professional aura
- Wants to be correct, has qualities of a leader but stubborn
- Willing to accept feedback, but difficult to change her ways; trusts herself over everything
- Investors are the bottom line

In our minds, there are two extreme types of users for both customers and business owners, and we felt it was most important to create personas on the ends of this spectrum in order to highlight the contrast. In the real world, we expect users to exhibit a mixture of these persona traits. The participants that we worked with in our user studies include some of our friends (representing customers/users that provide feedback), and local restaurant owners (representing business owners). We aim to study a range of demographics in order to retrieve a wide set of data.

SECTION 3: EXPLORATORY STUDY

When designing our exploratory study, we had to think about the personas that we came up with and how to relate them to the real world. Even though personas are designed as people that you could reasonably imagine existing in real life, it wasn't always perfect or feasible to find someone that fit the bill of each persona. We felt that regardless of persona, it was important to interview a wide range of individuals and then loosely classify them. Due to the unique and asymmetric nature of our project, we had to identify key goals for two groups: customer users and local business owners. In designing our study questions, this proved to be somewhat difficult as we realized that the two user groups likely had conflicting values. For example, we hypothesized that business owners would want to receive feedback in ways that the average user would be too lazy to provide. Nevertheless, we did not want to make too many assumptions and settled on the following overarching questions.

3.1: Questions to Answer

3.1.1: For Reviewers

- What is the target market for our product?
- What incentives would they have to use our app?
- What types of reviews do people want to leave and for what products and services?

3.1.2: For Business Owners

- What information are they lacking from customers? What knowledge would improve their business?
- How would they prefer to receive feedback, and how would it be used to improve their business?

We felt that if we were able to answer these questions from our study, then we would be much more comfortable moving towards the design process. Essentially, our focus and the purpose of the exploratory study was to identify the needs and wants of our target market, and seeing if they would be receptive to the idea. We designed our interview questions to help give us a better understanding of these overarching questions that we wanted to be answered.

3.2: Research Participants

When finding research participants for our study, we aimed for users that had a similar demographic to us. We felt that the early 20s university student is one of the most impactful groups of people in terms of social media presence and shaping the future. It's a demographic that dominates the

internet and we assume that a majority of those that will use are app fall in that demographic. In total, we interviewed 3 outside of class and 2 in class for our exploratory study, and had an even split between males and females. These were all for the user/reviewer group of people.

In regards to the business owner side, we found a handful of business owners that were willing to answer our questions and provide their insight, but were hesitant on signing the consent forms. They did not want to give consent for their results to be shared and written about due to the fact that it would be unnecessary risk on their part. In accordance with research ethics, this means that although we appreciate their cooperation and understand their concerns, it leaves us unable to report our findings or use the research in any way. This posed an interesting problem that we did not initially consider: it is very difficult to design something when one of your target groups is uncomfortable with divulging information and does not allow you to make use of their knowledge. Added onto the fact that our target demographic for the user side was people similar to us, we began to feel that we were only looking at one side of the equation. Regardless, we had to stick to our plan and make use of what we had.

3.3: Study & Methodology

Our research methodology was very simple: we would interview a subject 1 on 1 and ask them a series of questions. Most of these questions were part of a prepared script, and depending on the flow of the conversation, we would prompt the user with additional questions or ask them to elaborate. The entire interview would be audio recorded so that we could have a full transcript. All of the recordings were deleted after transcription was complete and the subject was made aware of the recording and intent at all times.

After conducting the study, we used different techniques in order to categorize and visualize our data in terms of themes and trends. We made use of concepts such as affinity diagrams and work models in order to do this. The most prominent themes we discovered was the fact that users only cared about strong experiences, and that they needed motivation to provide feedback on something. This was closely in-line with our original hypotheses so we were pleased to see that we were on the right track. Additionally, users expressed a desire to be more supporting of local business and more willing to do things locally that they would not do for big corporations. This led us to believe that it would be easier to motivate them in regards to providing feedback for local business. Other smaller themes included the fact that users expressed a desire to receive a reply from owners, which was also part of our goals (to connect businesses and users closer together). These themes were more or less hypothesized by us earlier, but we became more comfortable proceeding with our design process after they became confirmed by our study results.

3.4: Identified Breakdowns

The biggest breakdowns/problems that we wanted to focus on was how to incentivize someone to leave a review for a middling experience, and what kind of incentive would work and be sustainable in the long run. We also felt that users tend to leave more reviews for negative experiences, and our study subjects also corroborated that fact when asked; therefore, another hurdle to overcome is trying to solve the issue of bias. It can be quite harmful for a local business if the positive experiences are not properly conveyed and a non-proportionate amount of negative ones are relayed instead. Since we were unable to obtain study data on businesses, most of our design decisions will be focused on the user side of things.

SECTION 4: INITIAL DESIGN IDEAS

4.1: Addressing Problems

With each concern that we identified during our exploratory study, we made three important considerations when designing our ideas to solve them. These include what the participants said or felt needed improvement regarding the concerns, what is the best way to go about the concern that best aligns with our goal of supporting local businesses, and what we felt was the best approach in solving these concerns. The most difficult problem that we face is getting users to actually review products and their experiences from their local community. Therefore, it is crucial that we consider the opinions of the users that we conducted our exploratory study on. Our ultimate goal is to support local businesses by providing them a platform to gain more feedback from their customers so that they can grow their business to appeal to their consumers. Finally, with every business venture there would be no joy in the process if we the creators of Rotten Potatoes did not get an input into dealing with our user's concerns.

4.2: Using the Study

Many of the users we spoke to in our exploratory study told us that they have an intrinsic desire to support their local businesses but only care enough to review strong experiences whether good or bad. Some users also added that they would need some kind of motivation to get them to complete reviews. We used this information to help us in designing our prototypes. First, since users only care enough to review strong experiences then we will use ML algorithms to learn the user's interests and also the ratings of local establishments that user's intend on visiting to better predict whether it will be a positively/negatively strong experience or not. We were already aware that there would be many users that would need extra motivation to complete reviews on average and strong experiences. We decided to approach this by providing rewards of three kinds. One is monetary compensation for completing reviews funded by Rotten Potatoes, the second type of reward is provided from the local businesses in the form of coupons, free meals, free delivery, invitations for events, etc; and the last type of rewards come from our sponsors. Some other concerns that our users addressed to us in our exploratory study were that

they would prefer to be able to contact their local businesses and some users were deterred from completing reviews because of the format of the review. Using this feedback, we added messaging functionality for users and businesses and multiple review formats so that the user can complete the review in the most convenient way for them.

SECTION 5: PAPER PROTOTYPES AND EVALUATION

5.1: Description & Participants

The goals and hypotheses of our paper prototype evaluation are very similar to our exploratory user study, along with the participants. We were unable to receive consent from business owners, so we tested on a demographic comprised of university students.

5.2: Scenarios & Tasks

In a paper prototype study, it can be difficult to test a lot of functionality. Dynamic features such as personalized info gathered from social media, communicating with businesses, and other tasks that require explicit interaction (e.g. searching) is not exactly possible with a paper prototype. However, it is extremely helpful for obtaining feedback on the UI and core functionality.

For our study, we focused on the aforementioned UI and core functionality aspects. We wanted to test:

- User-interface when it comes to browsing businesses and viewing feedback
- Feedback format
- How mocked up curated spotlight features are received (i.e. favourite/popular businesses)
- Business description page
- Intuitiveness of functionality
- Mock messaging system, mock rewards system

By testing these general scenarios, we can have some preliminary feedback on what users thought about the overall interface and initial thoughts on the functionality. We gave them the following general tasks:

- Create an account and log-in
- Find X business and view the reviews
- Check-in and write a review for the business
- Change review formats
- View reward progress and profile page
- View mock message response from business to your review

We felt that this was simple enough within the limitations of a paper prototype while also providing us with enough feedback to make changes.

5.3: Results

Users were overall pleased with our design. They felt that it was very familiar to use and did not typically pause or look confused when carrying out the tasks. We identified that certain aspects of the layout confused users, such as buttons for reviewing products and businesses. These problems and

subsequent design changes are covered in future sections, so details will be withheld to reduce redundancy.

SECTION 6: DESIGN PROGRESS

6.1: Adjustments

From our paper prototype evaluations, we were able to identify four adjustments that we believed were necessary in our prototype designs in order to produce the best version of our product.

6.1.1: Review Button Confusion

The first adjustment our users identified to us was that the review buttons on the business page from the user perspective of the app was very confusing. We were displaying a review button beside every product item that a business listed and a review button at the end of the page for users to review the business as a whole but users were unsure as to what the extra button was for. We saw why this was an issue as new users to our app may not be aware of the full extent to which they can review products and businesses. In order to get around this, we decided to hide all the products under a button called “View Products”. The user would now only see the review buttons associated to products when they click this button and know that the only review button visible on the page is for the business as a whole.

6.1.2: Clarity on Review Formats

The second adjustment that became apparent to us was that users did not know what changing review formats did within our app and some could not even find the feature located in our profile settings. We intended having multiple review formats for our reviews so that users would be more comfortable reviewing their experiences. We understood that with our initial design of our reviews page, we made users go into their profile settings to change the review format for every review that they were completing but there was no label instruction anywhere informing the user of this. Some users also wanted to be able to change the format of a review while completing it and not affect the global review format. We decided to tackle this concern by adding a drop down with a label stating “Select Review Format:” on every review so that users could change the review format as they are completing a review but also change the global review format in profile settings. We added a label in the profile settings as well to indicate that the review format change here will affect every review in the app.

6.1.3: Streamlining Business Review Process

The third adjustment we saw that we needed to make from our prototype evaluation results was that creating reviews as a business user was a very long and arduous process. We had business users creating a separate review for every single review format they wanted to support on a product or for their entire business. It was not clear to us at first but after the prototype evaluation we saw how difficult it was for users and we decided that we needed to make some big improvements to this feature. The way we ended up tackling this was we added the review format to every question created in the review so that those questions show up when

the user opens the review in their preferred format or change that format. This way the business users were only creating one review full of questions with multiple question types that show up under different review formats.

6.1.4: Better Messaging Functionality

The fourth adjustment we saw that was necessary was with our messaging functionality in the app. Users found the process of messaging or viewing their current messages within the app was very inconvenient. We had users going to a business page if they wanted to start messaging that business or view their current message history. Users could also access unread message conversations from the notifications section accessible from the navbar but users wanted to be able to access all of their message conversations in one place all-together. We felt that this feature, like in many other popular applications is a very important feature and should be accessible to the user from anywhere in the app so we decided to include a navbar section for accessing your messages with other businesses.

SECTION 7: HIGH-FI PROTOTYPES AND EVALUATION

7.1: Goals for High Fidelity Prototype Evaluation

We want to confirm that the corrections we made to the prototypes actually improved the user's ability to complete the following tasks:

- Navigate to a business
- Create a review for a business
- Create a review for a product of a business
- Message a business

Additional questions:

- Was the application smooth and easy to understand? Even if users were capable of completing the tasks, how long did it take? If users took a very long time to complete any task, we should make the process clearer in our design
- Does the user understand what each element on the screen is supposed to do? We can answer this by periodically asking them what they think they can do at certain screens
- Any remaining confusions for users. It is possible that we missed issues within the application that were not caught via the paper prototype evaluation

7.2: Heuristic Walkthrough

Our participants were a mix of male and female university students that loosely correlated with our personas.

A common theme with all these heuristics is to make the interface as clean and easy to use as possible, as one of the fundamental aspects of our app.

7.3: Heuristics

7.3.1: Flexibility and Efficiency of Use

One of the fundamental aspects of this app is to make the review experience as simple and streamlined as possible so that potential reviewers are not deterred from reviewing due to extra complexity or overhead in the review process.

Expert users can also be flexible by changing their preferred review format in their profile, so they don't need to change it every time they leave a review. Less experienced users are still given the option to change their review format when they leave a review.

User Task Scenario: We will ask the user if they recognize any shortcuts along the way (e.g. changing preferred review format, nav bar, etc..)

7.3.2: Aesthetic and Minimalist Design

The app should be clean and not unpleasant to look at, so that users are not deterred by clutter or complexity of the app.

Scenario: It is fairly difficult to evaluate this through interactions with the app itself, so we will ask users if they felt that the app was clean or cluttered once they have gone through it.

7.3.3: Consistency and Standards

The business side edits of the review process should reflect what is shown on the user side, so consistency is very important in this case.

Scenario: We will ask a user to edit a review from the business side, and ask how they expect it to appear on the user side.

7.3.4: User Control and Freedom

While we want the app process to be as simple as possible, we also want users to have control of the process to an extent. If a user makes a mistake and wants to review something else, we would not want to deter them from writing their actual review by having too many steps to restart. We also allow the user to select their preferred review format out of a number of options.

Scenario: We will ask a user to start writing a review, cancel it, then start writing another review. We will also ask them to change to their preferred review format.

7.3.5: Recognition Rather Than Recall

Again, we want the experience to be as streamlined as possible for the review. If a user forgets how to navigate and use the app, a quick review they may have written on the spot might never come to fruition when it would have if the process was more intuitive.

Scenario: This is difficult to test with a single interaction, so we will take note of any time the user feels the app is unintuitive to use.

7.3.6: Gameful Design Heuristic:

The gameful design heuristic that applies most to our app is intrinsic motivation heuristic relatedness, which is defined as

affordances aimed at helping users satisfy their intrinsic need of relatedness through social interaction, usually with other users.

We want the associated meanings to be present in the following ways:

Social Interaction (I11)

- We want to allow users to connect and interact socially.

Social Cooperation (I12)

- We want to offer the opportunity of users working together towards achieving common goals, specifically, helping local business succeed.

Social Competition (I13)

- We could potentially include a point system that allows users to see their rankings compared to other users in terms of how helpful their reviews are.

Fairness (I14)

- We do not discriminate between veterans and newcomers in giving monetary rewards.

As it is difficult to evaluate this based on interactions with the app itself, we will ask users what their feeling were related to the above meanings once they have gone through the app.

7.4: Heuristic Walkthrough Results

- Changing review formats was very simple and intuitive
- Adding word “Default” to customize review format would make it more clear
- Icon for edit button is unclear
- Stats in the profile page would be nice
 - Money earned
 - Number of reviews
- Intuitive how to change preferred review format
- Understands to search for companies not on the home screen
- Figure out that you have to go to review products first to review whopper
- Two edit buttons confusing
- Change business edit review buttons to “Edit Review Format”
 - Add “Format” to the end of review buttons for more clarity
- One create review button
- Setting preferred reviews intuitive
- Confusing with meaning of edit business review
- Two edit buttons for products made it confusing
- Going straight into whopper review confusing
- Some buttons were hard to click, increase clickable surface
- Adding new item flow confusing when blank item appears
- Navigation a little bit unintuitive at first, but easy once you use it

7.5: Cognitive Walkthrough

For the cognitive walkthrough we provided users with various tasks to do which were split up into customer user tasks and business user tasks. This was to accurately capture the two side of our app. Like before, users were composed of a mix of male and female university students.

7.5.1: Consumer Side of App

Create New Users

- We wanted the users to identify that they could create a business user or a customer user and create the appropriate type of user.

Leave a Review for Burger King and a different review for the whopper

- Wanted user to navigate to the Burger King restaurant, find the review functionality and leave a review
- We also wanted them to understand the distinction between business reviews and product reviews, so we wanted them to also leave a review in the products section

Leave an Open-Ended review for Burger King

- Similar task as above, but we wanted the user to understand that they can change their review format while leaving a review

Edit User Information

- This task aims to test if users can navigate to the settings page and understand the different options
- Mainly, we wanted the user to understand that they can set a default review format which they interacted with in the previous task

7.5.2: Business Side of App

Create business user

- Simple task to create business user instead of customer user

Create a review for the business and a new product

- This task will get the user to navigate the review functionalities and create reviews formats for the business and products
- The user will interact with the various question types they can select for the questions in their review
- The new product flow should be an intuitive process for creating new products as well

Respond to Messages from Customers

- This task will test if users can interact with the message feature of the app

7.6: Cognitive Walkthrough Results

7.6.1: Customer User Tasks

- No problem leaving a review
- Struggled a tiny bit when finding View Products, but ended up figuring out how to leave a review for the Whopper
- No problems leaving an review and changing review format
- Able to locate the default review format in Settings, no issues at all
- Able to locate messages with the business
- No issues logging off
- Knows that you can search for businesses not appearing in main page
- No issues creating a user account

- No issues finding BK and reviewing, filling things out
- Knows to search for businesses not in main page
- Had some issues writing a review for BK, clicked on the wrong button at the beginning
- No issues leaving a review for the Whopper
- Had troubles finding review points, because it's too small (maybe add an icon)

7.6.2: Business User Tasks

- No problem creating a business user
- Able to add a new product to be reviewed
- Can delete a product
- Can add a new product to the BK portal
- No issues constructing a review format for the new product
- No issues finding reviews
- Can view messages and reply to them
- No issues looking at notifications
- Able to create a new product to be reviewed, but was confused as what it meant to create new review questions for the product
- Once the option was made clear, was able to create a simple and open-ended questions
- Found the buttons way too small
- No issues viewing messages

7.6.3: Opinions

- One user likes the navbar
- Finds some of the buttons too small, such as viewing reviews
- Enjoys the format of the layout for business page, says it's quite clean
- Overall, it's quite intuitive, compared to some other prototypes
- Very straightforward, enjoys the simplicity
- Suggestion: when there are reviews, should have the star ratings/an aggregate score on the business page for easy viewing

SECTION 8: CONCLUSION

It was a long journey from the original idea to the final product, with a lot of changes along the way. We started this project with a preconceived notion about how we wanted the app to look like and what users wanted. We then went out and questioned users that fit our constructed personas.

When coming up with our design ideas after our exploratory study, we used the user's feedback, our end goal, and our own thoughts as guidelines for determining which concerns to focus on and how to proceed with them. This led us to developing solutions like gathering users' interests to determine which experiences they would be more likely to review, providing rewards to users for completing surveys that come from different sources, messaging functionality between reviewers and businesses, and the ability to change review formats.

Having implemented features based on what we learned through interviews, we came up with our paper prototypes. Design process did not end here, as we showed the paper prototype to users and had them evaluate it.

From our paper prototype evaluation, our users made it clear that we needed to make four major adjustments to our app. The first was to declutter the review buttons that were all displayed at once upon visiting a business page. The second adjustment was to allow users to change review formats for just the review they are completing and better labels instructing users on what changing the review format in profile settings does. The third adjustment was to allow business users to assign review format types to questions they were adding to a review so that they did not have to create a separate review for every review format on each product they had. The final adjustment that our users brought our attention to was to add make the messaging functionality more accessible to the users and businesses within the app.

Finally, we constructed out high fidelity prototypes and got users to evaluate them. Most of our application was intuitive and easy to use thanks to our prior evaluations on the paper prototypes. We did however improve the flow for adding new products, reworded and rearranged confusing features to make it as clear as possible and added a way to track points and rewards received.

Our original idea was to have no restrictions of the types of reviews users can leave. However, upon learning that users prefer leaving certain types of reviews based on their preferences, we added a various review formats. We learned that some users wanted to leave reviews for products specifically so we added that previously unexpected feature. The navigation bar went from three items to five items based on the user's needs. Lastly, the layouts of these pages changed drastically as the project went on.

The overall experience taught how to design a product from the perspective of the user instead of assuming their needs. Many ideas we originally had were changed upon getting feedback from users. Furthermore, the process of figuring out what questions to ask, how to design prototypes and getting feedback taught us a lot about the process of creating a successful app.

Appendix

As we had many drawings and diagrams, we opted not to use an Appendix in our document. Instead, we have separately sorted and uploaded them in this email as pdf documents. We felt that this would be easier for you guys to parse/view instead of having everything jammed into the appendix of a Word document. If this is not acceptable, please let us know and we will reupload with everything in the appendix.