Restaurant Reservation App

Project Milestone 4 - Final Report

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Executive Summary

This report is about the making of our web application: Restaurant Reservation App. The application focuses on combining all the essential and useful features that a restaurant application should have, but at the same time having a layout that's easy to navigate especially for the type of potential users that we identified. We started this project because currently the existing restaurant applications that are available contain many problems, and we wish to address those problems with our product. The two user research that we conducted were paper prototype and survey. For each user research, we wrote down the results, the reasons for using this type of research, and the overall experience, to make sure the findings match what we are looking for. After that, we have our overall design and layout of the website to do further evaluation and testing. The heuristic evaluation were performed on the P3 version of Adobe XD prototype, and we took the feedbacks to produce this P4 version. The user testing was done with 3 different but similar type of users, and they were asked to think out loud while performing 4 different tasks. We are happy with the user testing result because all users were able to navigate the application relatively easy, and we were surprised to find out the issue they had when checking previous reservation detail. With those findings and suggestion from the user testing, we set out some plans for the next iteration of our design, and hopefully to produce the final product after the next round of testing. At the very end of this report, we include the survey results charts and datas from one of the user research.

Introduction

Overview

Every day many individuals, young and old, travel to restaurants only to find an hour long wait for a table. Calling to make reservations is often not much easier. Our restaurant web application will provide individuals the ability to browse for restaurants, find open tables and make a reservations without leaving their seat. The application would also offer a medium for the restaurant owners to place the important details about their restaurant, such as the menu, open/closing time, dates for special offer, pictures of the place, and more. However, this admin style panel will not be included in our initial design but may be included in subsequent iterations outside the scope of our project.

How it works

The application expects two types of user, the customer and the restaurant owner. To reiterate, we will be focussing on the customer design aspects in this report, but the usage of the restaurant owners is an import aspect to consider even when implementing the customer design.

The restaurant owner has a dedicated page for their restaurant, they can update everything on that page to reflect what their restaurant can offer. Outside of that page, the restaurant owners are just normal customer. The customer is mostly a receiver, they get information from different pages of restaurants and make their plan after. The few things that they can do to alter the restaurant page are writing review for the restaurant, writing review for one of the item on the menu, and making a reservation.

Stakeholders

Restaurant Goers

The largest group of stakeholders are your restaurant goers. These include but are not limited to families wanting a table at their favourite pizza joint after a hockey game, or young professionals taking advantage of after work happy hour.

Some noteworthy observations:

- Young and old attend restaurants, it is vital to keep the experience especially intuitive for older individuals.
    a. Matching items from the real world will help with this
- Generally have experience viewing restaurants online through places like google and yelp
    a. Draw some elements from those types of apps

Likely use the service to:

- Discover new restaurant based on some category (food type, rating)
- View the menu
- View the review
- Make reservation

Restaurant Staff

Restaurant staff will be responsible for seating groups based upon the current state of the reservation system. While staff will not make up the largest group of stakeholders by count, they are still users of the system and will have significant system use times. Restaurant staff include primarily hosting staff in larger restaurants and serving staff in smaller restaurants.

Some noteworthy attributes of restaurant staff:

- They are often very busy. Especially during peak times when greater number of individuals use our application.

- - To address this, the staff side of the system will need to be very quick and easy to understand at a glance.
  - Generally have access to a computer
  - Are given training when hired. Could potentially be trained to use the app if required.
  - Many have experience with other POS that manage reservations.
    - Mirror aspects of this where applicable

Likely use the service to:

- Manage reservation (cancel, extend)
- Manage table availability (make a table reservable after the customer leaves)

Restaurant Owners/Stakeholders

Restaurant owners are important stakeholders as they will be the ones to make the call to enroll their system in the service. They would be the ones to determine if the outcome justifies the cost. One benefit of our app is that it would provide restaurant owners with forecasts of reservations. In turn, they could save money by more accurately allocating staff to busier times.

- Often don't have a dedicated IT person nor tech literate themselves. Would be looking for a solution that works out of the box.
- Worry about the reputation of their establishment and would desire a quality product free of errors.

Likely use the service to:

- Manage the calendar of the restaurant
- Manage the description of the restaurant
- Manage the menu (add/remove item, update pictures and description)

Foodies

Foodies are individuals that are especially enthusiastic about trying new and interesting food and writing/sharing their experiences. Our app would provide a platform for them to share their experiences. They are able to review, take pictures and add ratings.

Likely use the service to:

- Review restaurant
- Review items on the menu
- Discover new restaurant based on some category (food type, rating)
- View the menu
- View the review
- Make reservation

Design Problem

Currently there are many existing applications related to restaurant, but are not very well made. We hope to address all of their problem and create a centralized application that has all the important features for the users.

Problems

- Too cluttered and overcomplicated. For example, many restaurant finding applications include the gps function, which the map covers 80% of the screen and hard to navigate around.
- Don't show menu/prices of items. Lots of applications only include photos, but not the actual menu.
- Too many different apps for individual establishments. McDonald has an app, Starbucks has an app, Domino's has an app, and the list goes on.
- Not enough functionality in a single app. One of the most important functionality should be to make a reservation, but almost no existing application has it.

Main Goals

- Filter by availability, rating, distance and cuisine.
- View menus, reviews and pictures of each establishment.
- Make a reservation.
- View restaurant deals and announcements.
- Design a layout that includes all the features but also easy to navigate around.

User Research and Findings

Paper Prototyping

Summary

The prototype was easy to produce, understand, and generated lots of good feedback. Most of the features that we were trying felt nicely implemented and structured, except navigating through the photo gallery. It was gated behind many links and required too much work to just view a photo of the restaurant. We decided to display the gallery as previews on the main page of the restaurant rather than having its own page. This could make the main page feel more clustered, but we can easily adjust the amount of previews to display depends on the future evaluation. Similar to the gallery issue, we got suggestion to have the functionality of reservation implement together with the calendar instead of having its own page, and potentially moving the calendar to the main page as well. Overall this research helped us identify not only what we did good but what we could've done better, and now we have our base paper prototype, future adjustment and testing will be much easier for us to do.

What we Have

Our paper prototype is built to get feedback on some important features and the layout of them. The features include displaying the search result of the restaurant, restaurant menu, calendar, photo, unique page for each item on the menu (includes review, photo). We believe these functionalities are the most important and how we display them will be essential to have good usability for new users. We have one piece of paper representing one page of the website, this allows us to quickly slap one page on top of another when the user clicks a link.

Why this Research Method

We choose paper prototyping to focus on refining and getting some feedback about the layout design, the flow of the website, and what are the must have functionality. Since we have many features that we felt are essential for our project, we think it's important for us to figure out which of them are needed and if we can include them all without making the website difficult to navigate for less experienced users. This particular user research method also allows us to produce future paper prototype segments and test them without the need of remaking everything from the start.

Experience when Conducting Review

Two major confusions occurred when having the user play around with our paper prototype. Since we use one piece of paper to demonstrate one page, when we put one page on top of another, a user thought it meant the new page is dynamically adding onto the existing page (Clicking one menu extends a list of items below it, pushes all other options like calendar and review down). This is not necessary an actual problem with the design of our project, but rather the design of the prototype, which could affect the feedback we get. Adding a more clear visual representation of refreshing or redirecting to a new page could fix this problem.

Another issue was that some features that are not being evaluate, but the user didn't know and try to play with it. At this stage of the development, we are still trying to get the essential down, so features like sign in and sign up are just too simple and trivial to our main focus. In the future we will make everything as segmented as possible, that way we can dynamically add or remove them when presenting our prototype for our user to try to reduce the amount of confusion.

Building a paper prototype was very helpful for our development. We were able to have a clear visual representation of what the final product might look like, as well as finding out what works and what doesn't. The user was also able to explain their suggestion better (this part is too big, too many stuff on this page, etc)

Photos
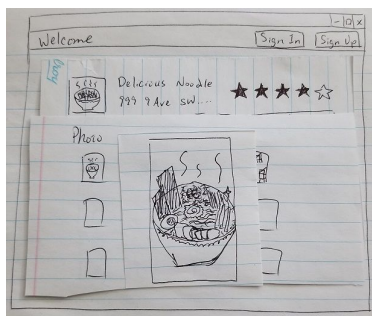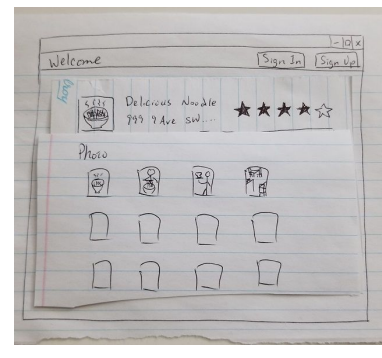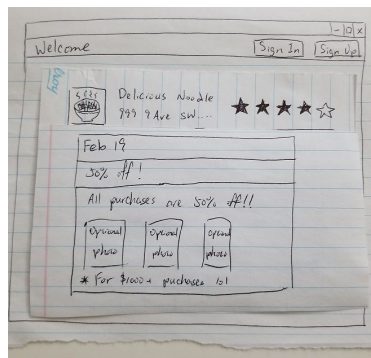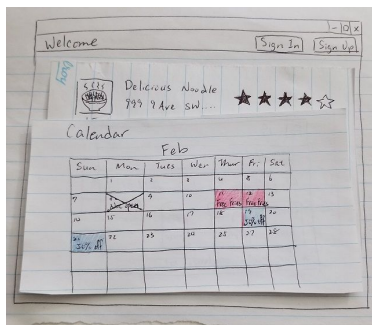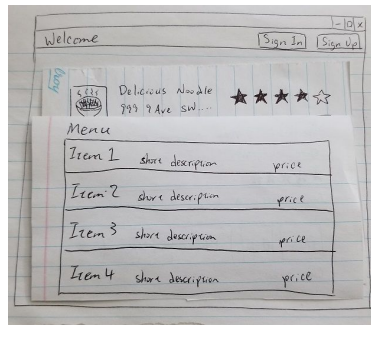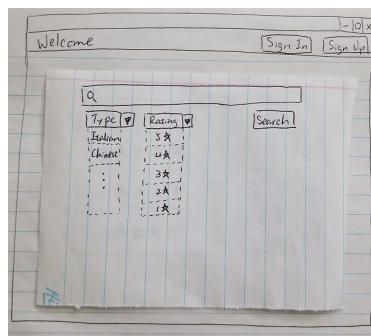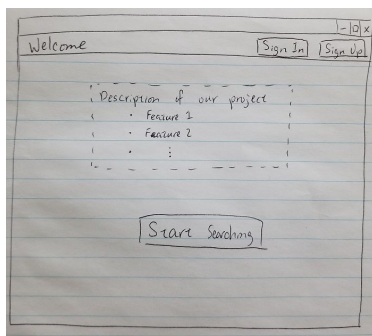
Survey

Summary

A survey seemed to be a very appropriate method for getting information from potential users. It allows us to gather specific information, and we structured our survey in a way where users could also add their own input to gather extra information we may have initially missed during our brainstorming phase. Surveys are an effective way of collecting specific information from specific target groups.

What we Have

Creating the survey was not very difficult, as we used Google Forms, which is a very simple, but effective tool for creating surveys. We were able to ask a variety of styles of questions, which also helps to retain surveyee attention. Google Forms also allows quick and easy export into a premade spreadsheet for easier data management, while also simultaneously making visual graphs to make data visualization very easy and manageable.

Survey can be found here: https://goo.gl/forms/ERCHYzRqP6XnNSqi1

Another good reason for using Google Forms as our tool is that you can split up the survey into sections like we did. The initial question asks if the user is using or has used similar applications, and then redirects them based on the answer. The questions asked in both sections were similar but had key differences, such as only the "Yes" users being asked whether the app they used had various features.

Why this Research Method

We chose this method because it allows us to choose what type of   information we will receive, while also letting us control who the information comes from to a certain degree. We can also choose the structure of information we get, such as ratings from 1-5, multiple choices from a pool of options, and short answer.

This information is then converted automatically into graphs and easily exported into spreadsheets, where we can easily further analyze the data as we see fit. The online survey method also allows us to remotely collect our data by distributing the survey on social medias, emails, applications such as Discord and Slack, and through mobile communication.

Experience when Conducting Review

When we conducted our research, we found that people weren't responding to our survey with the frequency that we initially expected. Possible reasons for this may include our distribution methods, how frequently many people are exposed to surveys and general uninterest in the topic. Our survey only reached a limited amount of users, so this method only gave us limited amounts of information.

Our main distribution method was Discord and some limited social media. I feel like our social media reach could have been higher to get our survey exposed to a larger group of people, at the cost of including people who aren't key users, and increasing our chance at intentional outlier information.

Results

See Appendix For Questions and Results

With these results, we can make a few conclusions:

1. More than half the users are not currently using a restaurant app, but nearly every user put down at least 1 feature that they would want if they were to use an app, showing there is a need for a solution.
2. Review features were in all applications, and were wanted by both current and potential users.
3. Menu features are very wanted, and in most applications
4. Scheduling features are not as common, but the demand for this feature is very spread out.
5. An events/deals/discounts feature is not as common, but is demanded fairly heavily.
6. Photos of menu items and the restaurant itself are in every user's application, and its demand is mixed.
7. A Lot of surveyees reported they didn't use applications due to lack of features that were reported to be in a lot of applications, which shows current applications are not doing a good job with feature clarity.

Design and Justification

Our design focuses on the customer side of things, so the layout of the website is designed to make every functionalities as accessible as possible.

- The search bar and filter next to each other to emphasize their relationship, and by having them on the top bar the user can always look up new restaurant without the need of find the search bar first.

- The sign in sing up, and user profile are always on the top right to be easily accessible and to match the layout of other similar website.

- We have all the important information display on the top of the restaurant page, things like restaurant name, description, rating, and announcements are all very essential information for the user to make their future decision like making reservation.

- The booking system and calendar are next to other since they are related. We have them in the center of the restaurant page because that's most likely the reason why the user is on this page. (User wouldn't be constantly revisiting the page to check out the menu, nor making reviews)

- Previews of photos on the side but still visible to catch user's attention. And menu button next to them, since that's what the user will check out next after seeing the photos. ("I wonder how much is food in this photo" or "I wonder what this food in this photo is called")

- Review section on the bottom of the page to avoid the user from getting bombarded with other users' comments. But still very easily accessible by just scrolling down.

- Majority of the functions and information can be obtained on the restaurant main page. This is to avoid overcomplicating the system.

Heuristic Evaluation and Findings

Visibility and System Status:

- Not able to check current, past ,and future reservations

Match between System and Real World:

- Once the user selects a restaurant the app displays important information about the restaurant and the user then has the option to view the menu or make a reservation.

- The design of the menu resembles real world menus, giving the user the feeling of familiarity.

Consistency Standards:

- Minor inconsistencies in UI (sign in, sign up) throughout prototype

Recognition Rather that Recall:

- When making a reservation, the user is taken to a new page which only displays a calendar with available booking dates.The page which a user lands on after selecting a restaurant displays many important pieces of information. This includes things such as announcements, ratings, pictures,links to the menu, etc. When making a reservation, the user is taken to a new page which only displays a calendar with available booking dates. Although the calendar is the most relevant piece of information regarding the booking, if the user forgets about pieces of information on the previous page, they would be forced to go back. This would cancel their booking and they would have to enter all of their information again, which can be tedious. A possible solution could be to include the booking process on the main page, since it is only a few text fields and a confirm button and therefore would not take up a lot of space. This would reduce the user's memory load.

Flexibility and Efficiency of Use:

- Need to press enter to search, could confuse some people

- Some concerns with the flexibility of this system includes not having a dedicated button to go to search on the main page: I am assuming since there are no overlay that pops up when you press a date on the calendar, you have to use the "make a reservation" button to create a reservation, not allowing a quick reservation to be made on this screen by pressing a date. This removes an intuitive and convenient

function to make reservations, and by not having this, the system is not as flexible as it could be and is not efficiently using the system. Another flexible element that is missing is when trying to press the rating/comment icons on the main results page, it does not take you to their respective elements, this is a missed opportunity I believe many people may use.

Aesthetics and Minimal Design:

- For this section, I believe that the system is designed with a good minimalist approach. The search page is straightforward, the search result page only shows what the user would want to see; a picture of the restaurant, how it's rated, how many comments are on it, and a share button to share with others. The search options are hidden in panels that pop up when you press them so they are not cluttered. The restaurant overview page gives adequate information if the user wants to look into the restaurant in a presentable way, and all the menus and make a reservation pages are clean and easy on the eyes. This app's design keeps it simple and does not confuse the user with too much information.

User Testing and Findings

Summary

Overall the users had no trouble with finding the functions needed to perform the tasks. Most of the problems they encountered were minor stuff that are related to better efficiency, things like clicking the restaurant rating and jumps to the review section or submit a rating without writing a comment. The biggest issue they had was having trouble finding their previous reservation detail, which we didn't expect.

The Approach

Three separate users were brought in to test our application. All between the age of 20~25, have lots of experience with technology. Each user was asked to think out loud (ie. explain their thought process) as they navigated our application's prototype. Each of the users were given 5 tasks and no guidance. Users were asked to hold their recommendations and findings until the end of each task such that we could properly consistently evaluate the time required.

User 1

- **It is 6pm on a Friday night and you are feeling like pizza. What do you do?**
    - Goes to search restaurant first
    - He says the first one seems good enough clicks on it
    - Asks if Order or pickup? This one is close, ill make a reservation.
    - Selected only one available
    -
    - What was the most difficult part of the task?
        - Nothing
    - Anything you would change to make it more practical?
        - Order or pickup
- **It is Saturday morning, you have just had the worst food poisoning of your life, rate the restaurant**
    - Find the restaurant again.
    - Submit review is pretty easy to find.
    - Press confirm
    - Account should show your own reviews
    - Edit reviews/Delete

- **You forgot what time your reservation was at. You have been waiting 6 months for this reservation and really do not want to miss it. What do you do?**
  - Goes to page and looks then to personal account
  - Show directly on page if you already have a reservation.
- **You are hungry, but what do you want to eat?**
  - Sees the filter button right away.
  - Chooses higher ratings
  - Price
  - More categories of food would be nice

User 2

- **It is 6pm on a Friday night and you are feeling like pizza. What do you do?**
  - "I will search the restaurant" (click the search bar, not the search icon)
  - "I always click the search bar first because icon is for enter" (prototype implementation issue)
  - "They are all the same" (click one of the restaurant page)
  - "I will check the menu" (click menu)
- **It is Saturday morning, you have just had the worst food poisoning of your life, rate the restaurant**
  - Attempt 1:
    - "I will let the site owner(us) know about this" (click "Help")
    - "I can't report them?"
  - Attempt 2: (Rephrase the question to "give the restaurant a bad review")
    - "I will look up that restaurant again" (click search icon)
    - (click the restaurant page)
    - (click the "Avg: 5 stars" label)
    - (scroll down and find the review section)
    - (click "submit review")
    - (click "confirm" then "continue")
  - Suggestion:Clicking the "Avg: 5 stars" label bring the user to the review section
- **You forgot what time your reservation was at. You have been waiting 6 months for this reservation and really do not want to miss it. What do you do?**
  - "I will look up that restaurant again" (click search icon)
  - (click the restaurant page)
  - "Nothing's here… Oh wait" (click user profile)
  - "Done"
  - Suggestion: Have a notification on the restaurant page that display the reservation that you made before

- **You are hungry, but what do you want to eat?**
  - "I will look up some Sushi and make a reservation" (click search icon)
  - "The prototype won't allow me to type so not sure how I can do this"
    - Want to type "Sushi" in the search bar, then filter later
  - (click one of the restaurant page)
  - (click the "Reservation available")
  - "Doesn't work... Oh" (use the reservation system smoothly)
  - Suggestion: Make "Reservation available" not with the green background, but a small green dot or circle in front of the "Reservation available"

User 3

- **It is 6pm on a Friday night and you are feeling like pizza. What do you do?**
  - Went and selected a place. Grabbed the only available time. Read reviews. Go back and look at other places. Pick and make a reservation. Back button to look at other places would be good
- **It is Saturday morning, you have just had the worst food poisoning of your life, rate the restaurant**
  - Rate or Review, they are different can you rate without reviewing? Visa versa. Searches up restaurant, rather than going to the profile and finding past restaurants.
- **You forgot what time your reservation was at. You have been waiting 6 months for this reservation and really do not want to miss it. What do you do?**
  - Struggled. To find place to view past reservations, clicked help, (did not find help) went back to restaurant page. Eventually went to account. Hard to tell what is buttons.
- **You are hungry, but what do you want to eat?**
  - Filter wasn't working on the restaurant page, went and back to main search, found filter without any issues. Selected japanese. Done.
- **What was the most difficult part of the task?**
  - Not being able to tell if something is a button
  - Hard to figure out how to go back (a real browser would have a back button)
- **Anything you would change to make it more practical?**
  - It doesn't look professional.

Recommendations for Next Iteration of Design

For our next iteration of the design, we would take a lot of the feedback provided through the Heuristic Evaluation and incorporate it into further improvements.

1.) Improving lookup for reservation information. This will be made easier to accomplish by locally storing the information on an easy to reach page.
2.) Using the actual menu design and pictures in the application to increase familiarity. This allows the customer to see beforehand what the menu will look like which can potentially save a lot of time and confusion when the customer goes into the restaurant.
3.) Better differentiation between Sign In/Sign up options to make it more clear what each does. Currently these options offer little explanation of what type of sign up or sign in is occurring so providing a small help tool can simplify this greatly
4.) Lowering user memory load by creating more accelerators and "quick" functions. Being able to make a quick reservation without having to move to a seperate page would lower the memory load on the user if the action can be performed on the same page. This means the user would have to make fewer state/page changes will simplifies things greatly.
5.) Repeatedly adjust the labels, button, layout, etc and test their usability to reduce the difficulty of navigating.

Conclusions

Overall, this project gave a lot of insight into development for this type of application. From the beginning we had a vague idea of what we wanted the application to accomplish but over the course of the project iterations, and through our various methods of research, some ideas evolved, and some were removed altogether.

Our initial research through surveys gave us an idea of what type of features people wanted in these type of applications, both from users that were currently using restaurant applications and users who were not. This research shaped the first iteration and both the low-fi and high-fi prototype, with features such as emphasis on reviews/ratings, menu item prices, and enough features that only 1 application is needed instead of several.

After the heuristics evaluation, we got a lot of important feedback, most of which was either implemented or would be implemented in a future iteration. This included lowering user memory load with actions requiring less inputs, better consistency with certain UI elements, and easier access of information, such as reservations. The feedback also showed that our minimalistic approach was well done, so this was kept in mind with any
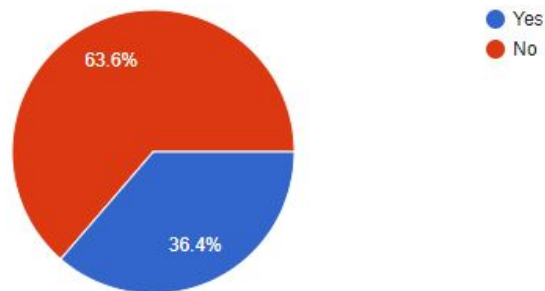
changes to be made. Some of this feedback also correlated with our user testing feedback, showing us that this feedback was consistent and needed implementation.

Appendix

Survey Results

Are you a current user of any restaurant application (reviews, reservations, menus, etc.)?
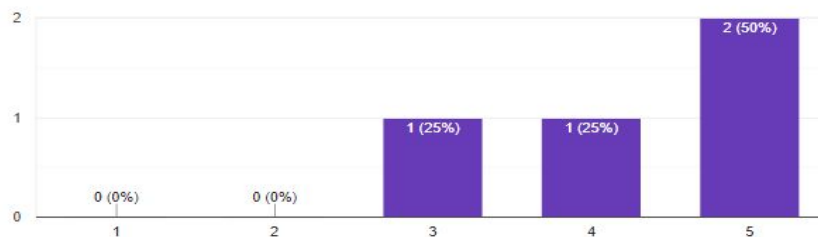
11 responses

- Yes
- No

63.6%

36.4%

Does your current application(s) have a review(s) feature?

4 responses

- Yes
- No
- I'm not sure

100%

How important is a review feature to you?

4 responses

0 (0%)   0 (0%)   1 (25%)   1 (25%)   2 (50%)

Does your current application(s) have a menu feature?

4 responses

- Yes
- No
- I'm not sure

75%

25%
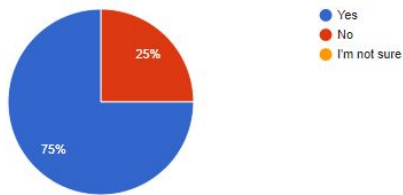
How important is a menu feature to you?

4 responses

0 (0%)   0 (0%)   0 (0%)   1 (25%)   3 (75%)

1   2   3   4   5
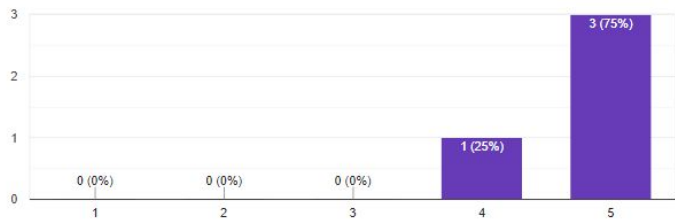
Does your current application(s) have a scheduling feature?
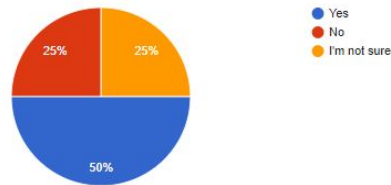
4 responses

- ● Yes
- ● No
- ● I'm not sure
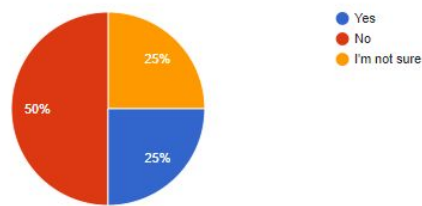
How important is a scheduling feature to you?

4 responses
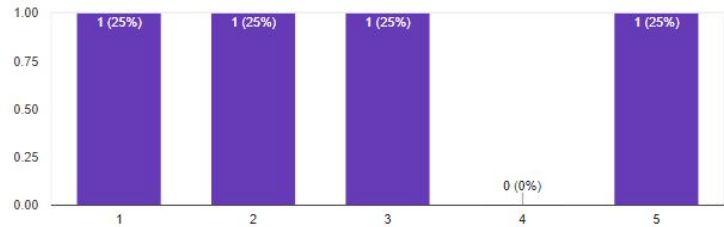
Does your current application(s) have an events/deals/discounts feature?

4 responses

- ● Yes
- ● No
- ● I'm not sure

How important is an event/deals/discount feature to you?

4 responses
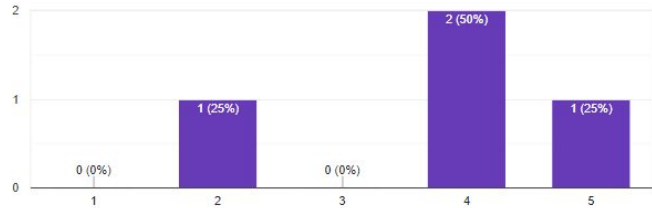
Does your current application have photos of menu items and/or the restaurant itself?

4 responses

- Yes
- No
- I'm not sure

100%

How important are photos of menu items/the restaurant itself to you?

4 responses

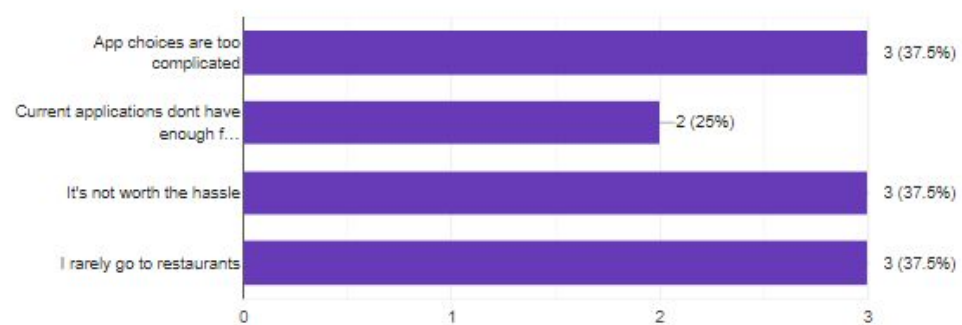|	1	2	3	4	5
	0 (0%)	1 (25%)	2 (50%)	1 (25%)	0 (0%)
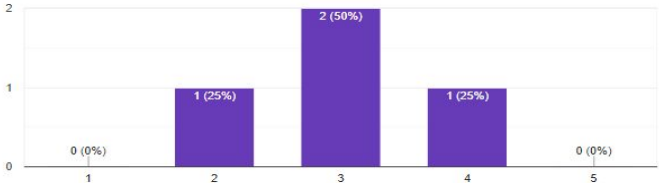
Is there any features not listed above that you're current application has that are important to you?

4 responses

no
Usability/Reliability i.e. does it integrate well with restaurants or do my reservations not go through, or menu is outdated, etc.
No
pre-paid and order online

Which of the following reasons most accurately represent why you are not currently using a restaurant application?
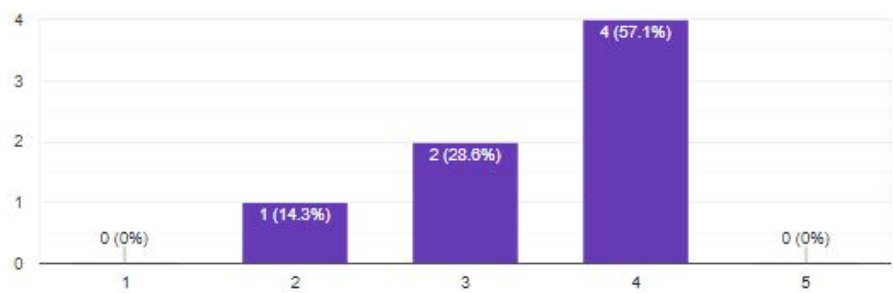
8 responses

Reason	Count
App choices are too complicated	3 (37.5%)
Current applications dont have enough f...	2 (25%)
It's not worth the hassle	3 (37.5%)
I rarely go to restaurants	3 (37.5%)

What features and characteristics would you want in an application for you to use it?

8 responses

easy to use

Cheap

view menu

Simple app with basic menu and reservation functionality. Preferably with good market preference. A large inconvenience with restaurant apps is how many different ones there are.

Reservations and menu are most important. Photos to know how to dress, etc. Weekly discount/happy hour info to help choose a restaurant.

Truly no idea

see pictures of the place
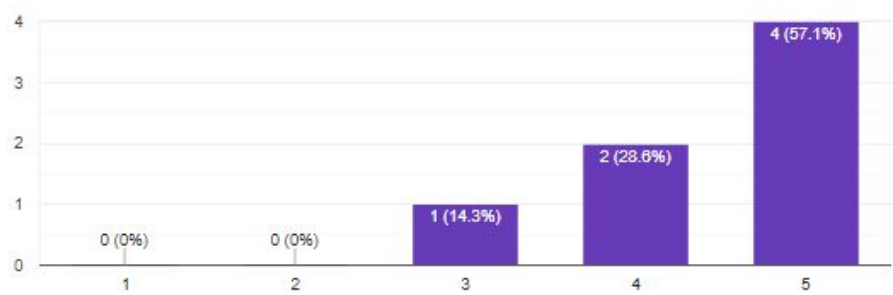
Menu

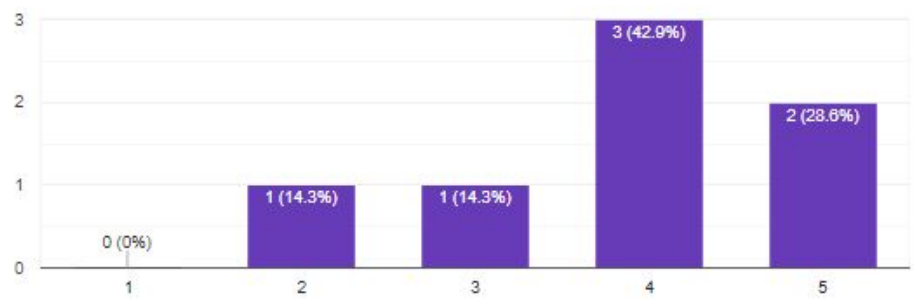## How important is a review feature to you?

7 responses

Untitled Section

How important is a menu feature to you?

7 responses

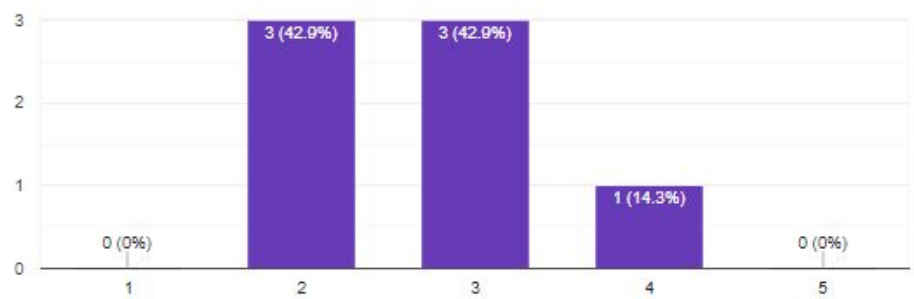## How important is a scheduling feature to you?

7 responses

Untitled Section

How important is an event/deals/discount feature to you?

7 responses

How important are photos of menu items/the restaurant itself to you?

7 responses