**Project Proposal**

**Project Title:** Food Share

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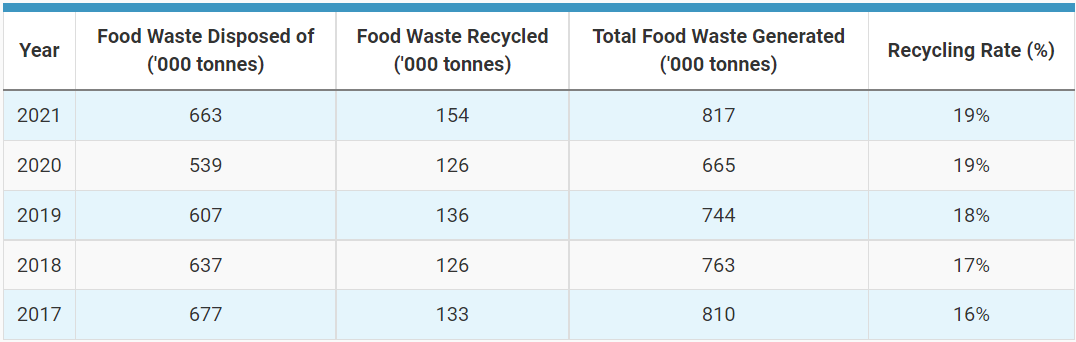
**Project Referenced From:** Olio (<https://olioex.com>)

**Team Members:** Bing Xin, Cyrus Meng, Paing, Jason, Wathanta, Wen Wen

* 1. **Problem statement**

According to U.S. Department of Agriculture, *food insecurity* is an economic or social condition in which individuals would have limited or uncertain access to safe and adequate food (USDA ERS, 2022). In a study published by SMU's LCSI and The Food Bank Singapore in 2020, 10.4% of Singaporean households were reportedly experiencing food insecurity (SIDHU et al., 2022). On the other side of the spectrum, food wastage is another issue Singapore is facing, i.e., on average 700,00 to 800,000 tonnes of food were wasted every year (See Table 1).

There were initiatives by governmental and non-governmental organizations to tackle these issues, and we would like to be part of these initiatives. We believe that excess edible food that would be thrown by individuals or businesses could actually be redistributed or given to people that would need it instead. We would also need to ensure our implementation of this technology does not affect businesses in a negative way.



*Table 1*: Table showing the statistics on the amount of food waste Disposed of, Recycled and Generated in the past 5 years. From "Food Waste Management", by National Environment Agency, 2022.

**Business logic**

**Introduction**

The *app* to be developed will be based on two business models that cater to three different end users. The first type of end users are the *receivers,* they are the individuals who will receive the food products. Individuals known as *givers* are the second type of end users. Givers would list the foodthey would want to give away through the app*,* and a receiver would then need to make a request for the selected food item by messaging the respective giver. The giver would then state the time and place to pick-up the food through the app's messaging system. The receiver would then proceed to collect the food within the agreed time. This basically explains the first business model.

The second business model (also known as the enterprise version) is meant to cater to businesses and enterprises such as restaurants, food stalls, supermarkets, or organizations that have extra food that they would like to give away. These businesses and enterprises are the third type of end users that use the app. The difference between this business model and the former is that it would require us to be an intermediary between them and the receivers.

The second business model is designed to especially target businesses that would prefer a free alternative in managing their *food waste*. The advantage of using the enterprise version of the app is twofold:   
Firstly, service will be provided to collect food from respective business premises;   
Secondly, the image or reputation of these businesses will be protected because the food collected will be filtered to ensure edibility and redistributed to receivers without the receivers actually knowing where the food came from.

To summarize, the abstraction layer protects businesses because it hides their identity (so these businesses would not be liable if *receivers* claimed to have food poisoning after consuming the *food*), and at the same time, businesses do not need to pay highly-charged fees to contractors for handling their *food waste*.

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| **Business Model 1: Givers-to-Receivers (G2R)** | | | |
|  | **Major** | **Medium** | **Low** |
| 1 | Register Users | Manage Account | Filter Preferences |
| 2 | Authenticate Users | Manage Food Listing | Send Push Notification |
| 3 | Create Food Listing | Report Users |  |
| 4 | Find Food | Reward Givers |  |
| 5 | Message Users | Predict Hotspots |  |
| 6 |  | Manage Users |  |

**Services and features**

*Table 2:* Table showing main use cases sorted according to their priority levels with respect to the business value they will or potentially could provide in G2R business model. Refer to **Appendix** for detailed information of respective features.

|  |  |  |  |
| --- | --- | --- | --- |
| **Business Model 2: Enterprise-To-Collectors-To-Receivers(E2R)** | | | |
|  | **Major** | **Medium** | **Low** |
| 1 | Register Users | Manage Account | Filter Requests |
| 2 | Authenticate Users | Manage Submitted Request | Send Push Notification |
| 3 | Request For Collection | Manage Response |  |
| 4 | Respond To Requests | Manage Users |  |
| 5 | Message Users |  |  |

**Services and features**

*Table 3:* Table showing main use cases sorted according to their priority levels with respect to the business value they will or potentially could provide at the enterprise level. Refer to **Appendix** for detailed information of respective features.

**Appendix**

1. Authenticate Users  
   - Login authentication
2. Create Food Listing  
   - Create a post to display food items to be given away, may include pictures and details.
3. Filter Preferences  
   - Filters out food selections according to receivers' food preference (halal/non-halal) and distance preference. It is also able to sort food selections by distance or by recency.
4. Filter Requests  
   - Filters requests made by enterprises by company name, food type, collection date/time, etc.
5. Find Food  
   - Displays food listing for receivers to select.
6. Manage Account  
   - To allow users to change their account settings, e.g., password, username, personal details, etc.
7. Manage Food Listing  
   - Allows non-enterprise givers to manage the food they posted on the listing.
8. Manage Submitted Request  
   - Allows enterprise givers to edit or configure the submitted request for food collection.
9. Manage Users  
   - Allow the admins to manage the userbase, e.g., remove user.
10. Message Users  
    - Allows users including the admins to interact with one another through a messaging system.
11. Predict Hotspots  
    - Helps receivers to identify locations where Food Share activities would potentially take place, e.g., displaying *Jurong East St 21* on receiver's dashboard indicating that this area could potentially have high volume of Food Share activities taking place in the future within a certain time period.
12. Prioritize  
    - For receivers in the low-income group, this feature will be activated implicitly.  
    - If activated, allows receivers to view all food listing.  
    - If deactivated (default state), allows receivers to view all food listing but hides *recently*\* posted food.  
    \* recency will be determined by the admins
13. Report Users  
    - Allow users to report other users, e.g., a giver reporting a receiver for not showing up after making an appointment for food pick-up.
14. Register Users  
    - Registers new users and store details into a cloud database system.  
    - For receivers, to identify low-income group, payslips are to be shown for verification. For no-income group, will need to come over to our office for further verification, and to provide extra assistance if it’s a genuine case.  
    - More details required for businesses to register, e.g., business name, phone number, email address, address, store type (e.g., restaurant, bakery, supermarkets), opening-days, routine pick-up time and day, etc.  
    - Users are required to key in a One-Time-Password into the app to complete the registration.
15. Respond To Requests  
    - Admins to accept givers request for food items collection at their premises within the specified date and time.
16. Reward Givers  
    - Monthly frugal medal (users who use the app with high stickiness, including food givers and food receivers).  
    - Influencer rewards (those who share the app with more than 5 of their friends or followers).  
    - Quests for food givers (Weekly quest, get rewards if quest accomplished, promotes food charity/sharing).   
    - Scoreboard to track reward points/progress (option to not be included in the scoreboard.
17. Request For Collection  
    - Allows enterprise givers to make food collection requests, specifying the food details in their submission.
18. Send Push Notification  
    - System to send push notifications to users or admins.

**A high-level use case diagram**

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| * 1. **Application Type** | * 1. **Front End** | * 1. **Back End** | * 1. **Server** | * 1. **Database** | **Machine Learning** | **Deployment** |
| * 1. Web App | * 1. React | * 1. Spring | * 1. Apache EE | * 1. MySQL/MSSQL | * 1. ScikitLearn/Keras | Railway |
| * 1. Mobile App | * 1. Android/ React Native | * 1. Spring | * 1. Apache EE | * 1. MySQL/MSSQL | * 1. ScikitLearn/Keras | Google Playstore |

* 1. **Scope and Technologies**

**Definitions**

1. "**App**" refers to the *Food Share* app.
2. "**Book**" means the action of confirming a Food selection.
3. "**Food**" means food, foodstuffs, or drinks.
4. "**Giver**" means a person or enterprise who Offers Food.
5. "**Receiver**" means a person who Receives Food.
6. "**Food Share**" refers to an activity which Food is transferred over from the Giver to the Receiver.
7. "**Offer**" means offering Food(s) to Receivers by listing it on the app.
8. "**App-Owner**" means the person(s) or organization(s) owning the app.
9. "**Admins**" refers to the administrator managing the app.
10. "**Users**" refers to both receiver and giver.
11. "**Food waste**" refers to Food that is fit for consumption but consciously discarded at the retail or consumption phases.

**References**

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