



Tackling Food Wastage



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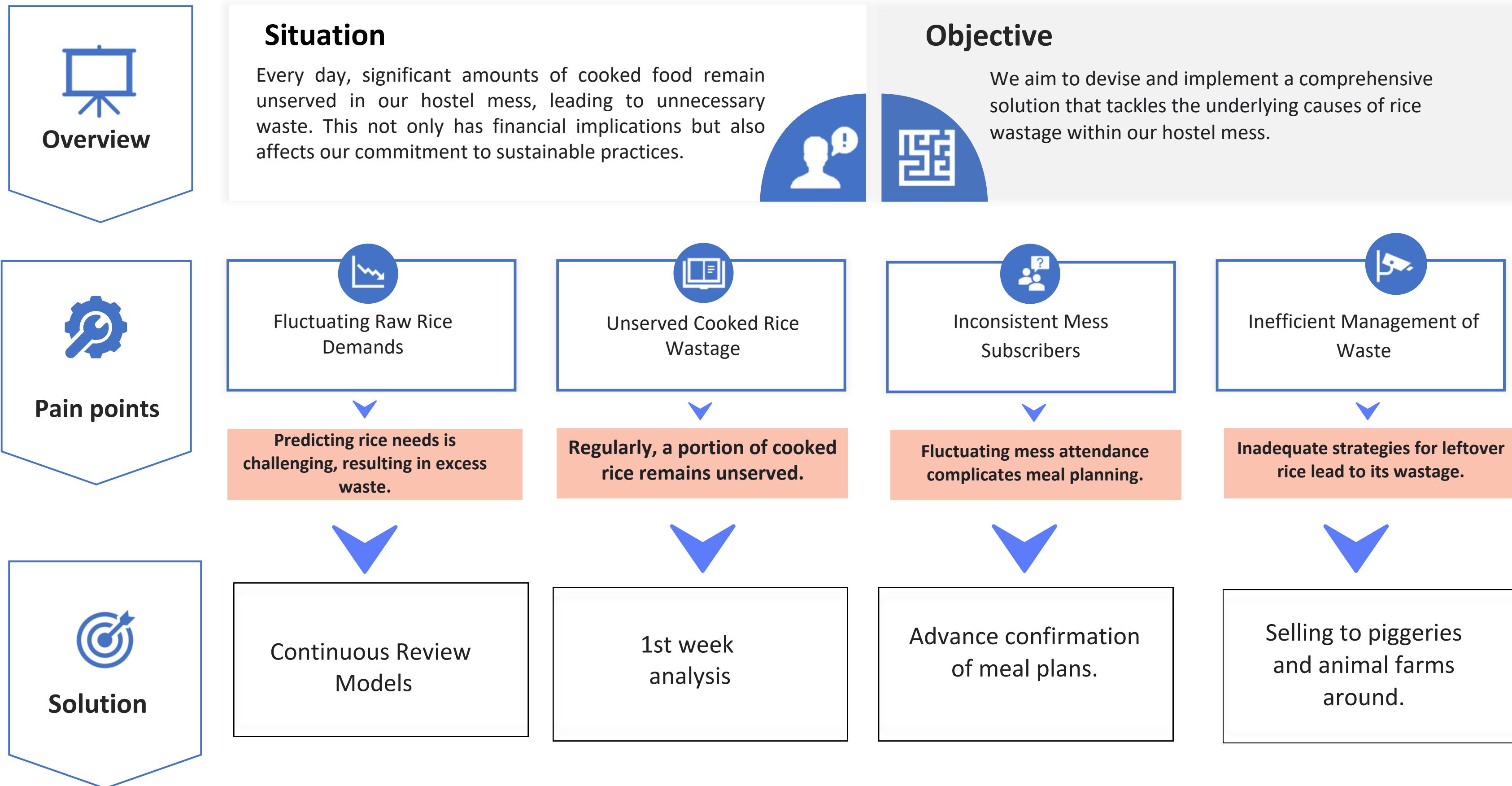
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Launch an app

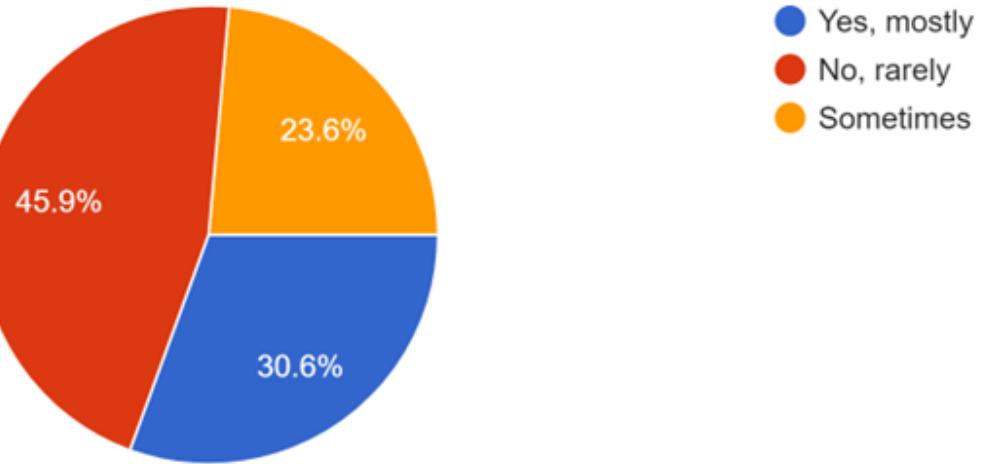
Executive Summary



Data Analysis

Do you eat Rice in Dinner?

229 responses



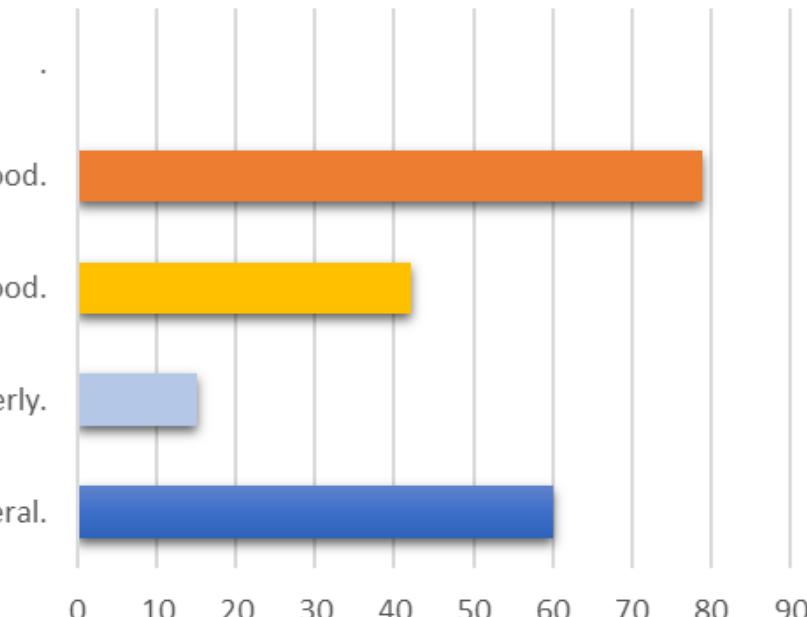
Why do you prefer not to eat rice?

The sabzi or curry provided is not good.

The quality of rice is not good.

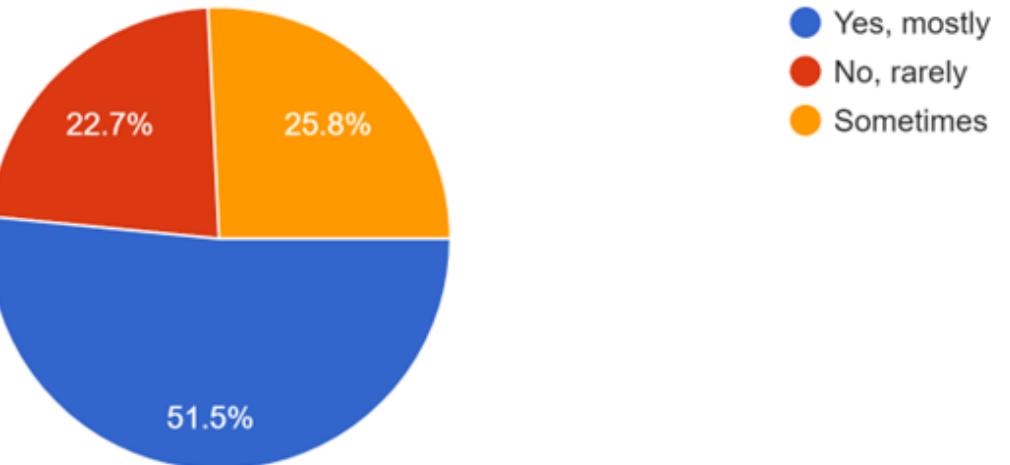
Its not cooked properly.

I do not like rice in general.



Do you eat Rice in Lunch?

229 responses



According to the form circulated among the students, 45.9% students prefer not to eat rice in dinner and 22.7% students do not eat rice in lunch. 79.6% students vote that the curry/sabji provided is not upto par, causing them to not eat rice.

Data Analysis

Rice Review

Taking a dive into how our relation with rice is and how the mess handles it.

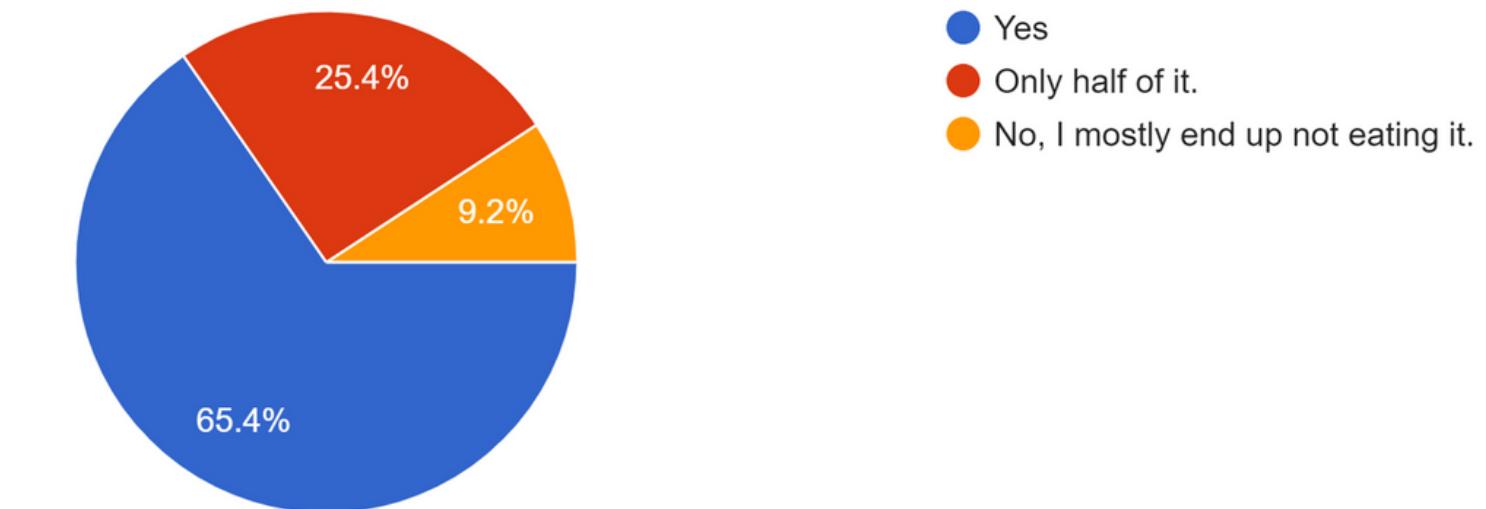
(google form)

We circulated a google form among the campus junta to get a better understanding of why the rice is getting wasted:

The majority said that the sabzi/curry provided isn't good.

Almost 35% of the students who do take rice only eat half or less of it.

Do you eat the entire portion of rice that you take?
228 responses



Data Analysis



Measurements of the container:

Length= 44

Breadth=30

Height=17.5

MONDAY, 4 JAN



For lunch:

Rice made= 104 kg

Rice wasted= 2 kg

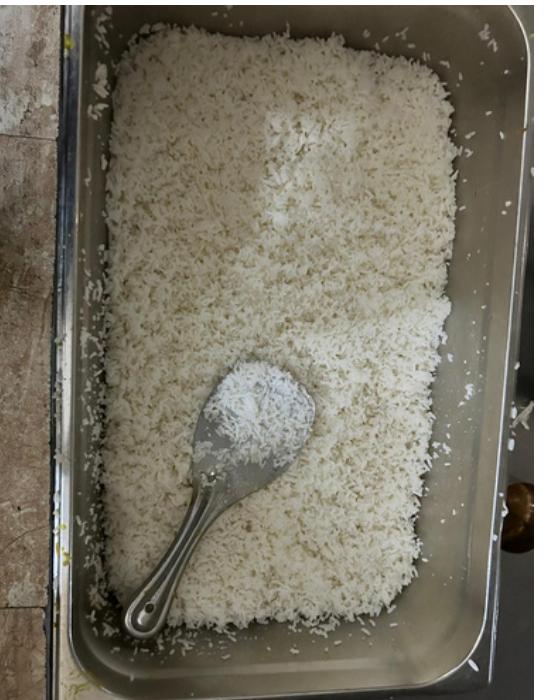
For Dinner:

Rice made= 80kg

Rice wasted= 5kg

Data Analysis

TUESDAY, 5 JAN



For lunch:

Rice made= 90 kg

Rice wasted= 4kg

For Dinner:

Rice made= 104 kg

Rice wasted= 2 kg

WEDNESDAY, 6 JAN



Pulao

Rice made= 60kg

Rice wasted= 2 kg

For White rice:

Rice made= 90 kg

Rice wasted= 2 kg



Data Analysis

THRUSDAY, 8 JAN



For lunch:

Rice made= 120 kg

Rice wasted= 5kg

For Dinner:

Rice made= 105 kg

Rice wasted= 3kg

SATURDAY, 3JAN



For lunch:

Rice made= 100 kg

Rice wasted= 700 GM

For Dinner:

Rice made= 90kg

Rice wasted= 3kg

FRIDAY, 9JAN



For lunch:

Rice made= 104 kg

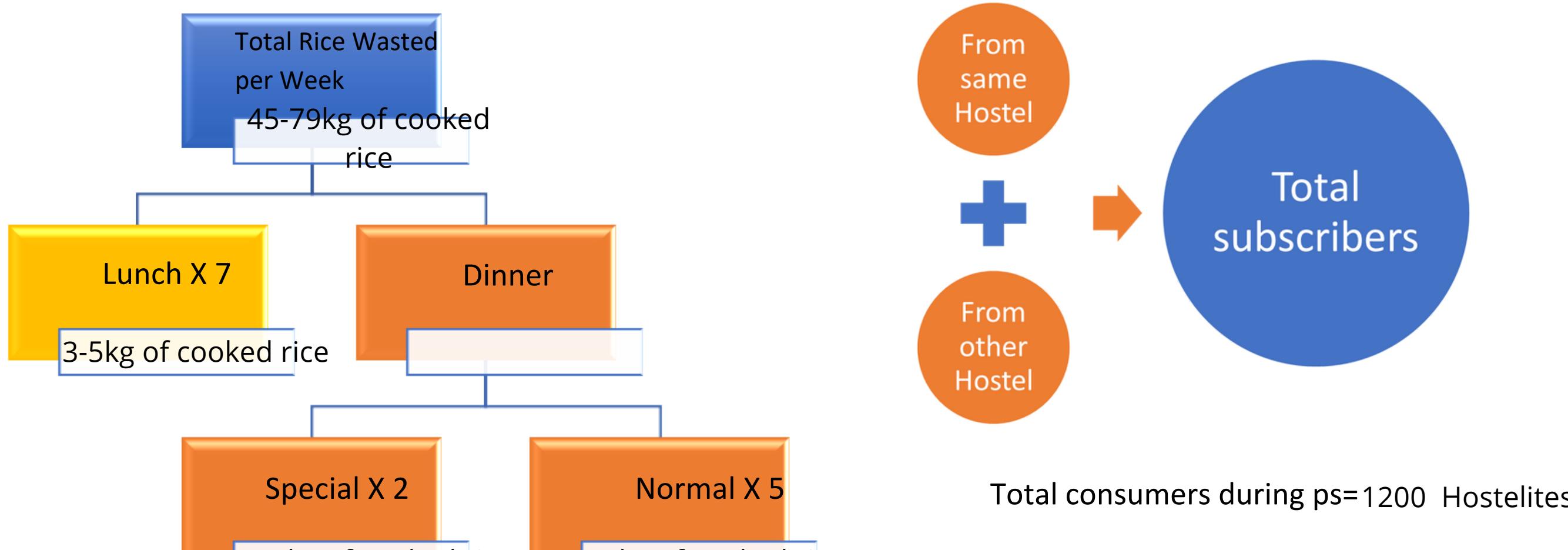
Rice wasted= 4kg

For Dinner:

Rice made= 92kg

Rice wasted= 2kg

Volume of plain unserved rice wasted per hostelite



Total Waste per week = 45-79kg

No. of weeks during PS=2

Total Waste during PS= 90-158kg

Total volume of plain rice
wasted from 27 jan to 9 feb per
hostelite = Approximately 65kg

Assumptions

- Assuming Hostelites = No. of mess subscribers.
- Assuming that, waste in every lunch meal is the same.
- Assuming that, waste in 5 normal meals is the same, and waste in 2 special meals is also the same.
- Assuming shape of rice container to be Cuboidal, as all the faces of the container are trapeziums except top and bottom faces which are rectangular, and also the container is not filled with rice up to the top.

Volume of plain rice wasted per hostelite

	Total people eating	No. of days	Total Attendance
NORMAL DAYS	850	10	$850 \times 10 = 8500$
SPECIAL DAYS	975	4	$975 \times 4 = 3900$
Rice cooked (kg/day)	No. of days	Total rice cooked	
NORMAL DAYS	104	10	$8104 \times 10 = 1040$
SPECIAL DAYS	120	4	$9120 \times 4 = 480$

Minimum subscribers = 750

Minimum rice cooked = 90kg

$$\begin{aligned} \text{average rice consumed per individual} &= 120/950 + 104/850 + 90/750 \\ &= 122.86 \text{ grams} \end{aligned}$$

30% do not eat rice and around 35kg plain rice remains unserved

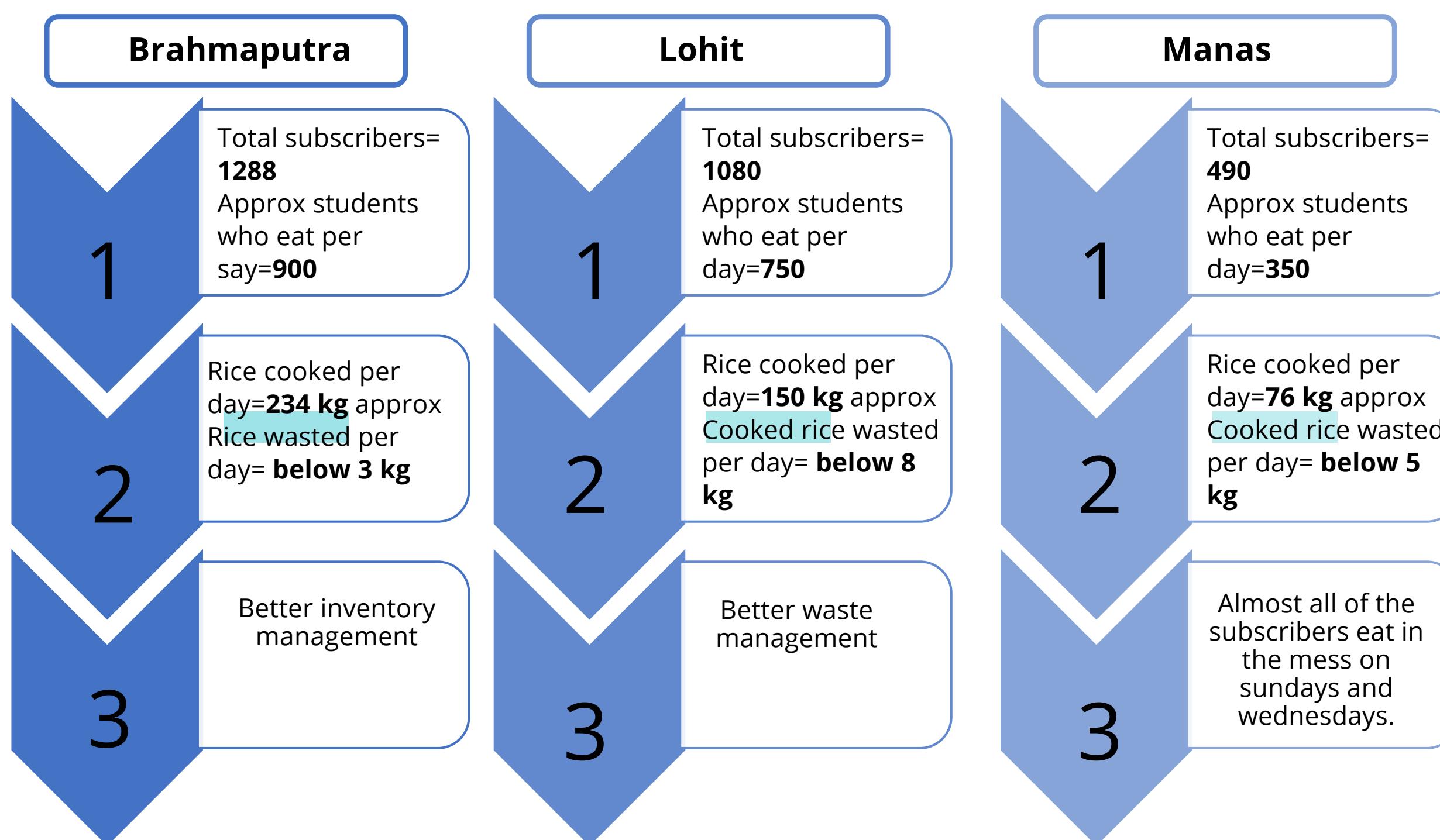
assuming 15% is wasted by per person (10% would be more appropriate , but as all do not eat rice we are taking 15%)

= 92.145 grams is consumed by each and 30.76 grams is wasted

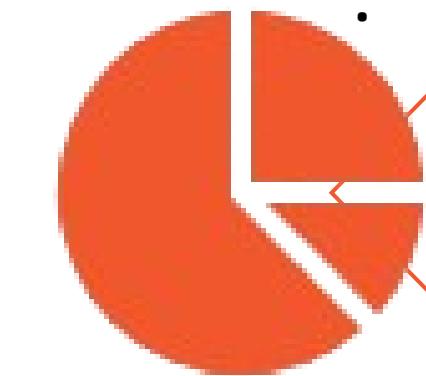
Assumptions

- on special days, 950-1000 people come to the mess, hence the average is = 975
- The data collected was of uncooked rice, and the cooked rice is twice the uncooked rice.
- 30% do not eat rice
- all the assumptions are taken by the google form survey.

Competitor Analysis



Key observations



Brahmaputra decides the amount of rice to be cooked everyday by analyzing the student's consumption in the first week of the month.



Brahmaputra prioritizes waste management by ordering the rice in three lots, the third slot varying by demand.



Brahmaputra, Manas as well as **Lohit**, all three have inadequate inventory space.

Continuous Review Model

Continuous review models are inventory management strategies where the inventory level of a product is monitored after each transaction. The primary goal is to ensure that inventory levels are maintained at an optimum to meet demand without incurring excessive holding costs or risking stockouts.

(Q,r) Model

- **Q (Order Quantity)** : The optimal quantity of inventory order to minimize total costs, both ordering and holding costs.
- **r (Reorder Point)** : This point is calculated to ensure sufficient stock to cover demand during the lead time for new inventory.
- When the inventory level hits the reorder point r , an order of size Q is placed.
- By determining the optimal quantity of rice to order and setting a precise reorder threshold, we ensure continuous availability without overstocking.

Periodic Review

- Inventory is continuously monitored, but orders are placed at fixed intervals based on observed levels and predetermined rules.
- Order quantities adjust to meet a target level based on forecasted demand and lead time until the next review.
- The target level is set using forecasted demand plus safety stock for demand variability and supply uncertainties.
- The Periodic Review Model matches well with fixed meal schedules in a hostel mess, enabling inventory checks at set times, like weekly post-dinner.

Implementing (Q,r) Model for Rice Inventory in Hostel Mess

Problem

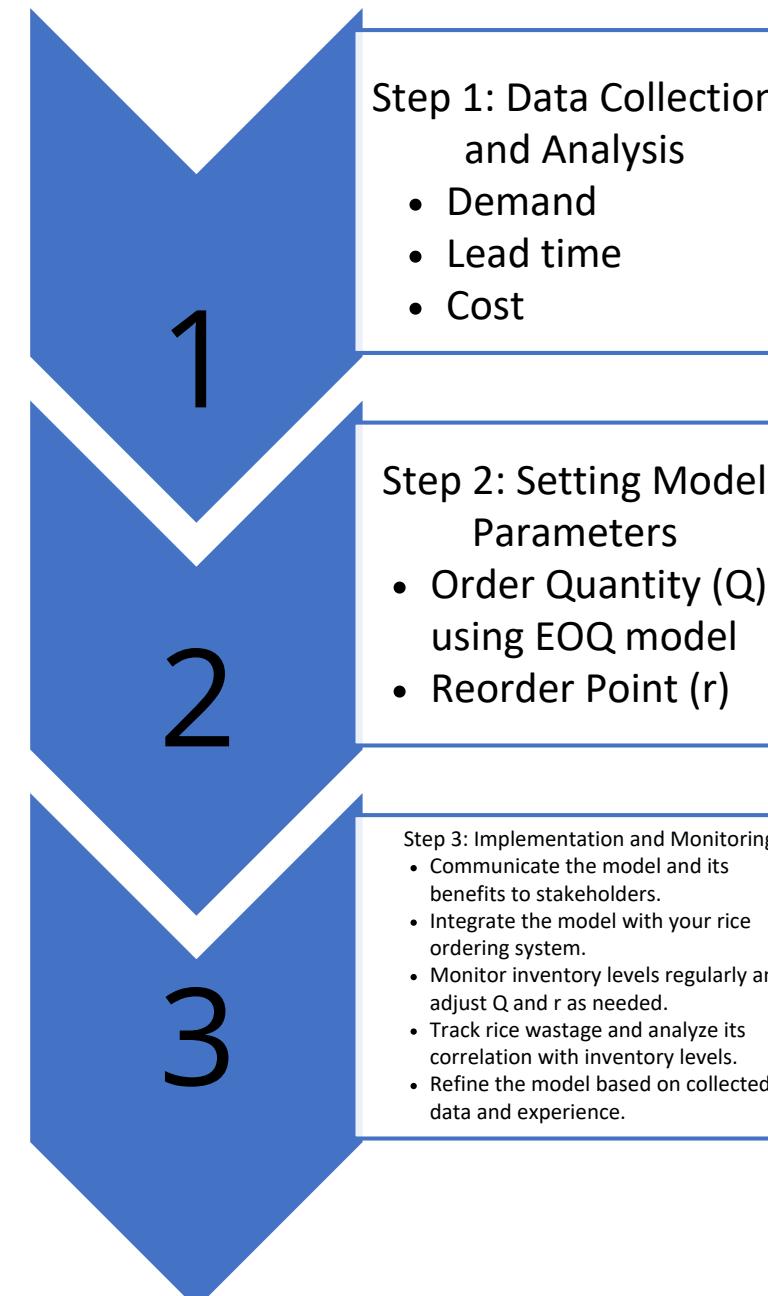
Disruption due to understocking or spoilage & inavailability of storage spaces due to overstocking

Calculating (Q,r):

1. Order Quantity (Q): Use the Economic Order Quantity (EOQ) formula: $Q = \sqrt{(2DS)/H}$ where D is average daily demand, S is the cost of ordering, and H is the cost of holding per unit per unit time.

2. Reorder Point (r): Use: $r = D * L$

Implementation



Benefits

The (Q,r) model optimizes rice inventory, saving costs, boosting efficiency, and offering flexibility for a sustainable and data-driven solution.

- Reduced costs: Saves money by minimizing holding and ordering costs, while preventing stockout issues.
- Improved efficiency: Eliminates guesswork and streamlines ordering, leading to accurate inventory levels and efficient resource allocation.
- Data-driven approach: Uses real data for objective decision-making, ensuring the inventory strategy aligns with reality.
- Adaptability and flexibility: Easily adjusts to changing demands and allows for quick reactions to disruptions.
- Scalability: Applicable to other food items, offering a comprehensive inventory management solution.

1st week Analysis Method (Periodic Review with continuous monitoring)

Problem

Varying Rice consumption tendencies based on side dishes

Periodic review with continuous monitoring: This hybrid model combines aspects of both worlds. Inventory is continuously monitored, but orders are placed at fixed intervals based on some initial observation and subsequent changes are made in case of change in the order value.

Implementation

1
2
3

1st Week: Track daily rice consumption by side dish, noting influencing factors. Analyze and calculate average daily usage.

Predict & Plan: Estimate demand for remaining weeks based on 1st week data and past trends, then plan and order rice accordingly

Monitor & Adapt: Conduct mid-month checks, adjust remaining orders if needed, and refine the model for future based on experience.

Benefits

According to our google survey, the leading reason for not preferring rice was that the sabzi or curry provided. To account for this , we propose this solution.

The 1st week analysis tackles rice wastage by:

- Predicting demand accurately: Uses 1st week data for better forecasts than guesswork, reducing overstocking and understocking.
- Minimizing waste: Prevents excess rice spoiling and ensures enough to avoid missed meals.
- Saving costs: Reduces storage and potential stockout expenses, plus optimizes ordering.
- Boosting transparency and collaboration: Encourages data-driven management and communication.

IMPLEMENTATION - Mapping of wastage points

Launch a Food app - Food Hygiene

CONSUMPTION

Problem: 1. Over production of food produced.
2. Inconsistent flow of Consumers.

BENEFITS:

1. Benefit of both the parties.
2. Wastage of food could be avoided in an easier manner.

IMPLEMENTATION



Features of App:
1. Consist of checklist of every meal of mess subscribers.

2. Meal checkout options available
(If subscriber is going to miss meals, they can checkout on the list, and they will get debate price for it)

3. Regular rating options can be made for cleanliness, food quality along with feedback option.



Thank You