**Project Design Phase**

**Problem – Solution Fit Template**

|  |  |
| --- | --- |
| Date | 22 June 2025 |
| Team ID | LTVIP2025TMID35452 |
| Project Name | Smart Sorting: Identifying rotten fruits and vegetables using transfer learning |
| Maximum Marks | 2 Marks |

**Problem – Solution Fit Template:**

The Problem–Solution Fit in this context means that we’ve identified a critical issue faced by farmers, vendors, and supply chain managers — difficulty in accurately and quickly identifying rotten fruits and vegetables — and developed an AI-based solution that uses transfer learning to automate spoilage detection, reducing waste, saving time, and improving efficiency.

**Purpose:**

❑ Help farmers, vendors, and distributors solve the critical problem of detecting spoiled fruits and vegetables using an accurate and easy-to-use AI solution that fits their daily operations.   
❑ Accelerate adoption by leveraging existing devices like smartphones and familiar behavior like taking pictures, making the solution accessible even in rural or low-tech environments.

❑ Strengthen communication and outreach by using messaging that connects emotionally—focusing on reducing losses, ensuring quality, and building trust with buyers.

❑ Build stronger relationships with end-users by addressing real, everyday frustrations such as labor costs, manual errors, and unexpected spoilage, and by providing a reliable and fast alternative.

**Template:**

**6. CUSTOMER CONSTRAINTS**

* Low budget or cash flow issues
* Lack of digital literacy or AI knowledge
* Poor internet connectivity in rural areas

**6. CUSTOMER CONSTRAINTS**

**What limits their ability to take action?**

* Low budget or cash flow issues
* Lack of digital literacy or AI knowledge
* Poor internet connectivity in rural areas

**6. CUSTOMER CONSTRAINTS**

**What limits their ability to take action?**

* Low budget or cash flow issues
* Lack of digital literacy or AI knowledge
* Poor internet connectivity in rural areas

fd

**5. AVAILABLE SOLUTIONS**

* - Manual inspection by laborers
* Basic sorting machines (color/weight based)
* Chemical sensors (expensive)

### ****CUSTOMER SEGMENT(S):****

* Small-scale farmers
* Fruit/vegetable vendors
* Agricultural cooperatives

3sma

**2. JOBS-TO-BE-DONE / PROBLEMS:**

* Reduce manual inspection time and labor costs
* Prevent mixing of fresh and rotten produce

### ****7. BEHAVIOUR****

### Manually sort and check each item visually

* Employ additional seasonal labor during harvest
* Dispose bulk quantities when spoilage is noticed late
* Use visual scales to grade fruits

### ****9. PROBLEM ROOT CAUSE:****

* Lack of affordable and accessible quality control tools
* High dependency on manual labor with low skill variance
* Supply chain delays lead to spoilage

### ****3. TRIGGERS****

High product returns due to poor quality

Customer complaints or health concerns

**4.EMOTIONS:BEFORE/AFTER:**

| **Stage** | **Emotion** |
| --- | --- |
| **Before** | **Stressed, uncertain, tired, overwhelmed, worried about loss** |
| **Ater** | **After: Relieved, confident, in control, satisfied, tech-savvy** |

### ****8. CHANNELS OF BEHAVIOUR****

#### ****8.1 ONLINE****

* Search for agricultural best practices on YouTube
* Watch training or demo videos on smart farming

#### ****8.2 OFFLINE****

* Attend farmer meetups, Krishi melas (agri fairs)
* Visit cooperative societies or agri-dealers
* Government training centers

**8.2 OFFLINE**

* Attend farmer meetups, Krishi melas (**8.2 OFFLINE**
* Attend farmer meetups, Krishi melas (agri fairs)
* Visit cooperative societies or agri-dealers
* Government training centers
* )
* Visit cooperative societies or agri-dealers
* Government training centers

### ****10. YOUR SOLUTION****

### **Smart Sorting: AI-Based Detection of Rotten Fruits & Vegetables**

* Use transfer learning with MobileNetV2 to detect spoilage early
* Deploy on mobile/web app using camera capture
* Classifies items as “Fresh” or “Rotten” with confidence scores
* Easy-to-use UI for farmers/vendors

References:

1. <https://www.ideahackers.network/problem-solution-fit-canvas/>
2. <https://medium.com/@epicantus/problem-solution-fit-canvas-aa3dd59cb4fe>