

Project Design Phase

Problem – Solution Fit Template

Date	22 June 2025
Team ID	LTVIP2025TMID35526
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:

1. CUSTOMER SEGMENT(S): <ul style="list-style-type: none"> Small-scale farmers Fruit/vegetable vendors Agricultural cooperatives 	6. CUSTOMER CONSTRAINTS <ul style="list-style-type: none"> Low budget or cash flow issues Lack of digital literacy or AI knowledge Poor internet connectivity in rural areas 	5. AVAILABLE SOLUTIONS <ul style="list-style-type: none"> Manual inspection by laborers Basic sorting machines (color/weight based) Chemical sensors (expensive) 						
2. JOBS-TO-BE-DONE / PROBLEMS: <ul style="list-style-type: none"> Reduce manual inspection time and labor costs Prevent mixing of fresh and rotten produce 	9. PROBLEM ROOT CAUSE: <ul style="list-style-type: none"> Lack of affordable and accessible quality control tools High dependency on manual labor with low skill variance Supply chain delays lead to spoilage 	7. BEHAVIOUR Manually sort and check each item visually <ul style="list-style-type: none"> Employ additional seasonal labor during harvest Dispose bulk quantities when spoilage is noticed late Use visual scales to grade fruits 						
3. TRIGGERS High product returns due to poor quality Customer complaints or health concerns 4. EMOTIONS: BEFORE/AFTER: <table border="1" style="width: 100%; border-collapse: collapse; margin-top: 5px;"> <tr> <th style="width: 15%;">Stage</th><th style="width: 85%;">Emotion</th></tr> <tr> <td style="text-align: center;">Before</td><td>Stressed, uncertain, tired, overwhelmed, worried about loss</td></tr> <tr> <td></td><td>After: Relieved, confident, in control, satisfied, tech-</td></tr> </table>	Stage	Emotion	Before	Stressed, uncertain, tired, overwhelmed, worried about loss		After: Relieved, confident, in control, satisfied, tech-	10. YOUR SOLUTION Smart Sorting: AI-Based Detection of Rotten Fruits & Vegetables <ul style="list-style-type: none"> 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 	8. CHANNELS OF BEHAVIOUR 8.1 ONLINE <ul style="list-style-type: none"> Search for agricultural best practices on YouTube Watch training or demo videos on smart farming 8.2 OFFLINE <ul style="list-style-type: none"> Attend farmer meetups, Krishi melas (agri fairs) Visit cooperative societies or agri-dealers Government training centers
Stage	Emotion							
Before	Stressed, uncertain, tired, overwhelmed, worried about loss							
	After: Relieved, confident, in control, satisfied, tech-							

References:

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