

Problem-Solution Fit Canvas

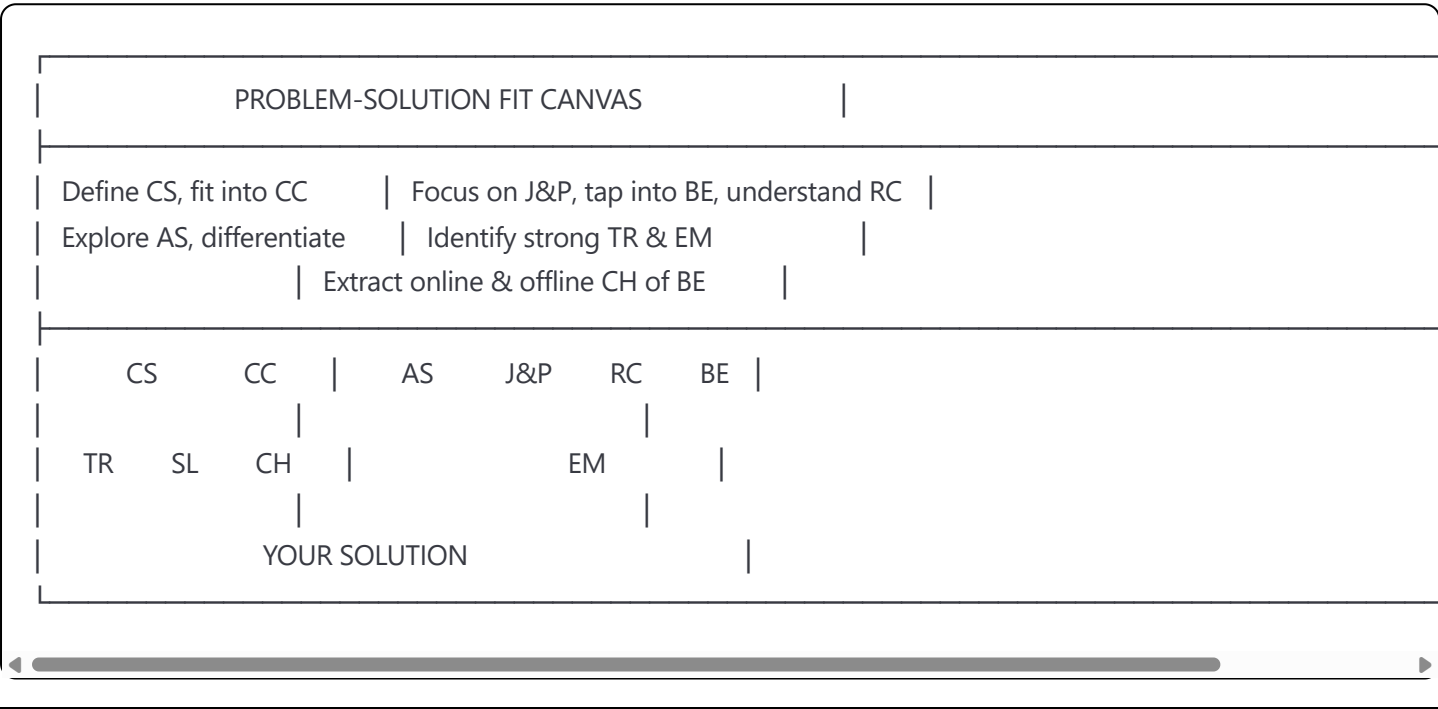
GrainPalette - Rice Type Classification System

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Project Name: GrainPalette - A Deep Learning Odyssey In Rice Type Classification Through Transfer Learning

Canvas Overview:



1. CUSTOMER SEGMENT(S) - CS

Who is your customer?

Primary Customer Segments:

Rice Farmers (Small to Medium Scale)

- Individual farmers with 1-50 acres of rice cultivation
- Cooperative farming groups and agricultural societies
- Age: 25-60 years, varying digital literacy levels
- Located in rice-growing regions globally

Agricultural Researchers & Students

- University researchers studying rice varieties
- Agricultural extension officers

- Graduate students in agricultural sciences
- Plant breeding specialists

Commercial Rice Traders & Exporters

- Rice procurement companies
- Export businesses dealing with quality standards
- Grain storage and processing facilities
- Agricultural commodity traders

Rice Processing Industries

- Rice mills and processing plants
 - Quality control departments
 - Food manufacturers using rice as ingredient
 - Packaging and branding companies
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2. JOBS-TO-BE-DONE / PROBLEMS - J&P

Which jobs-to-be-done (or problems) do you address for your customers?

Functional Jobs:

- **Accurate Rice Variety Identification:** Determine exact rice type for proper classification
- **Quality Assessment:** Evaluate grain quality for pricing and market positioning
- **Quick Decision Making:** Rapid identification for time-sensitive trading decisions
- **Inventory Management:** Proper categorization of rice stocks in storage facilities
- **Research Data Collection:** Systematic classification for agricultural research

Emotional Jobs:

- **Confidence Building:** Feel assured about rice variety identification decisions
- **Stress Reduction:** Eliminate anxiety about misclassification and financial losses
- **Professional Competence:** Demonstrate expertise in rice quality assessment
- **Trust Building:** Establish credibility with buyers and trading partners

Social Jobs:

- **Knowledge Sharing:** Educate others about rice varieties and characteristics
 - **Community Support:** Help fellow farmers with grain identification
 - **Professional Recognition:** Gain respect as knowledgeable agricultural professional
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3. TRIGGERS - TR

What triggers customers to act?

Immediate Triggers:

- **New Rice Harvest:** Need to classify freshly harvested grain
- **Trading Opportunities:** Potential buyers requesting specific rice varieties
- **Quality Disputes:** Disagreements about rice variety or quality
- **Export Requirements:** International buyers demanding specific classifications
- **Market Price Fluctuations:** Need to verify grain type for optimal pricing

Situational Triggers:

- **Expert Unavailability:** Local rice experts not accessible when needed
- **Time Pressure:** Urgent classification needed for business decisions
- **Cost Concerns:** Expensive laboratory testing not feasible
- **Research Deadlines:** Academic projects requiring quick grain analysis
- **Regulatory Compliance:** Government quality standards requiring verification

Emotional Triggers:

- **Uncertainty:** Doubt about rice variety identification
 - **Financial Pressure:** Concern about potential losses from misclassification
 - **Competitive Pressure:** Need to match competitor's quality standards
 - **Learning Desire:** Curiosity about improving rice knowledge
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4. EMOTIONS: BEFORE / AFTER - EM

How do customers feel when they face a problem and afterwards?

Before (Problem State):

- 🤔 **Anxious:** Worried about making wrong identification decisions
- 😞 **Frustrated:** Tired of slow, expensive traditional methods
- 😟 **Uncertain:** Lack confidence in their rice variety knowledge
- 😡 **Stressed:** Pressure from time constraints and financial implications
- 😓 **Helpless:** Dependent on unavailable experts or expensive testing
- 😬 **Insecure:** Fear of making costly mistakes in rice trading

After (Solution State):

- 😊 **Confident:** Assured about rice variety identification accuracy
 - 😌 **Relieved:** Stress-free decision making with reliable results
 - 😊 **Empowered:** Independent capability to classify rice varieties
 - 😊 **Satisfied:** Quick, cost-effective solution to identification needs
 - 😊 **Proud:** Enhanced professional competence and knowledge
 - 😎 **In Control:** Able to make informed decisions independently
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5. AVAILABLE SOLUTIONS - AS

Which solutions are available to the customers when they face the problem?

Current Solutions & Limitations:

🔍 Manual Visual Inspection

- **Pros:** No cost, immediate availability
- **Cons:** Subjective, inconsistent, requires expertise, time-consuming

👤 Expert Consultation

- **Pros:** High accuracy, professional credibility
- **Cons:** Expensive (\$50-100), limited availability, geographical constraints

🧪 Laboratory Testing

- **Pros:** Scientific accuracy, detailed analysis
- **Cons:** Very expensive (\$100-500), slow (days/weeks), complex procedures

📖 Reference Books/Manuals

- **Pros:** Comprehensive information, educational value
- **Cons:** Complex to use, requires training, subjective interpretation

💛 Peer Networks

- **Pros:** Free, community-based, practical experience
- **Cons:** Inconsistent quality, limited expertise, geographical bias

📱 Basic Mobile Apps

- **Pros:** Convenient, accessible
 - **Cons:** Limited accuracy, basic features, narrow variety coverage
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6. CUSTOMER CONSTRAINTS - CC

What constraints prevent your customers from taking action?

Financial Constraints:

- **Limited Budget:** Small farmers cannot afford expensive testing
- **Cost-Benefit Analysis:** ROI concerns for premium solutions
- **Variable Income:** Seasonal and unpredictable agricultural income

Technical Constraints:

- **Digital Literacy:** Limited smartphone/computer skills
- **Internet Connectivity:** Poor network coverage in rural areas
- **Device Limitations:** Older smartphones with basic camera quality

Operational Constraints:

- **Time Pressure:** Need immediate results for business decisions
- **Scale Requirements:** Need to process large quantities quickly
- **Quality Standards:** Must meet specific accuracy requirements

Geographical Constraints:

- **Remote Locations:** Limited access to experts and testing facilities
 - **Language Barriers:** Solutions not available in local languages
 - **Regional Variations:** Different rice varieties in different regions
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7. BEHAVIOUR - BE

What does your customer do to address the problem?

Direct Problem-Solving Behaviors:

- **Visual Comparison:** Compare grains with reference samples
- **Expert Consultation:** Seek advice from experienced traders/farmers
- **Online Research:** Search for rice variety information and images
- **Peer Discussion:** Ask fellow farmers and agricultural communities
- **Trial and Error:** Test different identification methods

Indirect/Workaround Behaviors:

- **Conservative Pricing:** Price lower to avoid risks from misclassification
- **Bulk Mixing:** Combine varieties to avoid specific identification
- **Delayed Decisions:** Wait for expert availability despite time pressure

- **Over-reliance on Suppliers:** Trust supplier claims without verification
- **Documentation:** Keep detailed records of previous identifications

Learning Behaviors:

- **Skill Development:** Attend workshops and training sessions
 - **Network Building:** Connect with rice industry professionals
 - **Technology Adoption:** Gradually embrace digital agricultural tools
 - **Information Gathering:** Collect rice variety references and samples
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8. CHANNELS of BEHAVIOUR

8.1 ONLINE - CH

What kind of actions do customers take online?

- **Agricultural Forums:** Participate in rice farming discussion groups
- **YouTube Videos:** Watch rice variety identification tutorials
- **WhatsApp Groups:** Share grain images with farming communities
- **Google Search:** Look up rice variety characteristics and images
- **Social Media:** Follow agricultural experts and organizations
- **E-commerce Platforms:** Purchase rice-related tools and equipment
- **Agricultural Apps:** Use existing farming and crop management apps
- **Government Websites:** Access agricultural extension services
- **Online Marketplaces:** Research rice prices and market trends

8.2 OFFLINE - CH

What kind of actions do customers take offline?

- **Agricultural Markets:** Visit local grain markets for direct comparison
 - **Cooperative Meetings:** Attend farmer group discussions and meetings
 - **Extension Centers:** Visit agricultural department offices
 - **Training Workshops:** Attend rice cultivation and quality seminars
 - **Peer Visits:** Visit other farms to observe and learn
 - **Expert Meetings:** Meet with agricultural consultants and researchers
 - **Trade Shows:** Attend agricultural exhibitions and demonstrations
 - **Local Networks:** Leverage community relationships for advice
 - **Field Demonstrations:** Participate in agricultural technology demos
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9. PROBLEM ROOT CAUSE - RC

What is the real reason that this problem exists?

Systemic Issues:

- **Knowledge Gap:** Insufficient training and education on rice variety identification
- **Technology Lag:** Agricultural sector slow to adopt digital solutions
- **Standardization Lack:** No universal standards for rice classification
- **Expert Shortage:** Limited number of qualified rice classification experts
- **Infrastructure Gaps:**