Improving Profitability for Sham's Small-Scale Wheat-Paddy Farm in Haryana

A Proposal report for the BDM capstone Project

Submitted by

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Contents

Declaration Statement

I am working on a project titled "Improving Profitability for Sham's Small-Scale Wheat-Paddy Farm in Haryana.". I extend my appreciation to **Sham's Farm** for providing the necessary resources that enabled me to conduct my project.

I hereby assert that the data presented and assessed in this project report is genuine and precise to the utmost extent of my knowledge and capabilities. The data has been gathered from primary sources and carefully analyzed to assure its reliability.

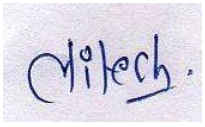
Additionally, I affirm that all procedures employed for the purpose of data collection and analysis have been duly explained in this report. The outcomes and inferences derived from the data are an accurate depiction of the findings acquired through thorough analytical procedures.

I am dedicated to adhering to the principles of academic honesty and integrity, and I am receptive to any additional examination or validation of the data contained in this project report.

I understand that the execution of this project is intended for individual completion and is not to be undertaken collectively. I thus affirm that I am not engaged in any form of collaboration with other individuals, and that all the work undertaken has been solely conducted by me. In the event that plagiarism is detected in the report at any stage of the project's completion, I am fully aware and prepared to accept disciplinary measures imposed by the relevant authority.

I understand that all recommendations made in this project report are within the context of the academic project taken up towards course fulfillment in the BS Degree Program offered by IIT Madras. The institution does not endorse any of the claims or comments.

Signature of Candidate:



Name: Litesh

Date: 27 February 2025

1 Executive Summary

This project focuses on Sham's small-scale farm in Kurukshetra, Haryana. He grows wheat and paddy on 2 acres of land using diesel-powered irrigation and chemical fertilizers.

The farm faces low profitability due to rising costs of fertilizers, labor, and irrigation. High expenses for seeds, diesel, and water management reduce profit margins despite government MSP prices. Unpredictable weather and a lack of cost-saving practices further worsen the issue.

The project will:

1. Analyze key costs (fertilizers, irrigation, labor) to identify major expenses.
2. Evaluate efficient irrigation methods and bulk purchasing strategies to reduce costs.
3. Compare current practices with potential solutions to identify cost savings.

The expected outcome is actionable strategies to reduce input costs and improve profits.

2 Organization Background

Sham is a small farmer from Kurukshetra, Haryana, born into a family of farmers. His father and ancestors have cultivated these lands for generations, and Sham started working in the fields at just 15 years old. Today, he manages 2 acres of land split into two separate fields.

Sham grows paddy in summers (June–August) and wheat in winters (November–April). Over the years, he has also experimented with crops like cauliflower, peas, and maize but now sticks to paddy and wheat for simplicity.

Unlike larger farms, Sham works alone and rents tractors or machinery when needed. He doesn't own a tube well and relies entirely on government-built irrigation channels to water his crops. His family's decades-old farming knowledge guides his work, but modern tools and technology remain out of reach.

3 Problem Statements

3.1 **High irrigation costs:** Sham spends too much on watering his crops. He uses diesel pumps and rents tube wells, which cost a lot of money to run and fix.

3.2 **Rising fertilizer expenses:** fertilizer and pesticide costs keep rising every year. Sham spends a big part of his money on these chemicals.

3.3 **Labor Problems:** Hiring workers for planting, spraying pesticides, or harvesting is getting expensive. Good workers are hard to find during busy seasons.

3.4 **Prices vs. costs:** The government sets crop prices (MSP), but Sham's expenses (diesel, fertilizers, labor) keep growing faster than his earnings.

4 Background of the Problem

4.1 High Irrigation Costs

Sham's 2-acre farm has two fields far apart. Irrigation is expensive because:

- He uses a separate diesel pump for one field and rents water from a private tube well for the other field.
- He uses a pipeline system that often gets damaged, leading to high maintenance costs.
- The panchayat water channels carry wastewater and have plastic waste that clogs Sham's pump, causing damage and higher diesel use.
- Rising diesel prices make running pumps more expensive every year.

4.2 Rising Fertilizer Costs

Sham spends a lot on fertilizers and pesticides because:

- He buys small amounts from local shops, which charge high prices.
- Fertilizer prices have gone up due to global issues.
- He owns cows and buffaloes but doesn't use their manure, missing a chance to reduce chemical costs.

4.3 Labor Shortages & High Wages

Sham faces three labor problems:

- Manual labor is needed for sowing and harvesting, but workers demand high wages.

- Crops like *Basmati* rice require manual harvesting, which is expensive.
- Laborers prefer city jobs, leaving Sham to work alone or pay extra during busy times.

4.4 Fixed MSP vs. Rising Costs

Sham struggles with the government's MSP (Minimum Support Price) because:

- MSP for wheat and paddy has barely increased, while costs for diesel, fertilizers, and labor keep rising.
- MSP doesn't adjust for inflation or global price hikes, making farming unsustainable for small farmers like Sham.

5 Problem Solving Approach

5.1 Data Collection

I will track all expenses Sham incurs from seeding to harvesting, including:

a. Seeds: Cost of wheat/paddy seeds per acre.
b. Fertilizers & Pesticides: Prices and quantities of urea, DAP, etc., bought monthly.
c. Irrigation: Diesel is used for pumps, tube well rentals, and maintenance costs.
d. Labor: Wages paid for sowing, pesticide spraying, and harvesting.
e. Miscellaneous: Fuel for fieldwork, equipment rentals, etc.

5.2 Phase-wise Analysis

I'll split the data into 3 phases to simplify comparisons:

a. Phase 1 (Seeding): Seed and labor costs for sowing.
b. Phase 2 (growing): fertilizer, pesticide, and irrigation expenses.
c. Phase 3 (harvesting): labor, transportation, and equipment costs.

5.3 Cost Comparisons

Using MS Excel, I'll compare Sham's current costs with hypothetical alternatives.

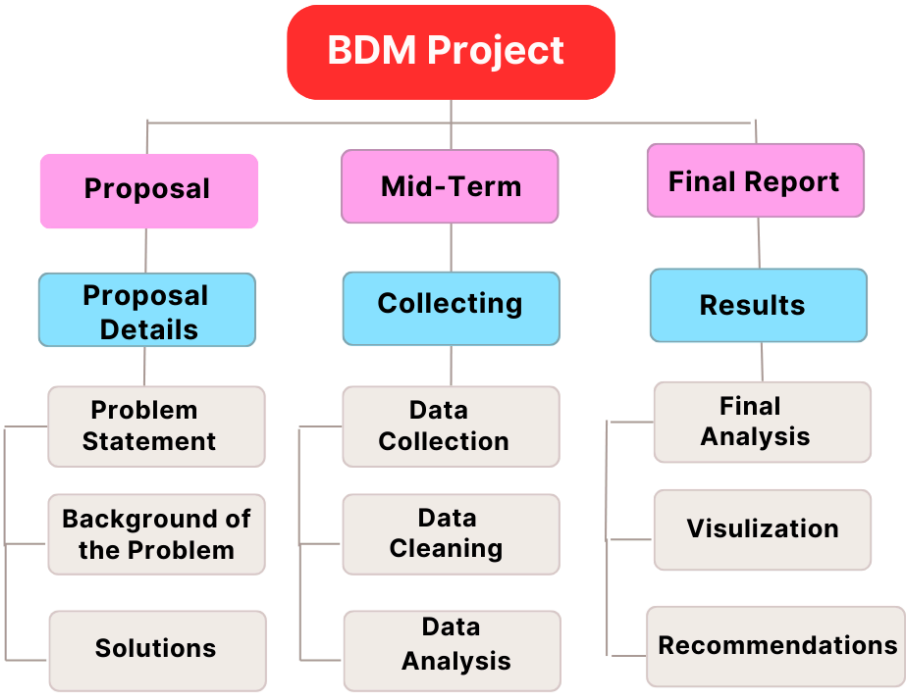
5.4 Visual Evidence

I'll create Excel charts to show:

a. Expense Breakdown: Pie chart of total costs (seeds, fertilizers, irrigation, labor).
b. Savings Potential: Bar graph comparing current vs. alternative costs.

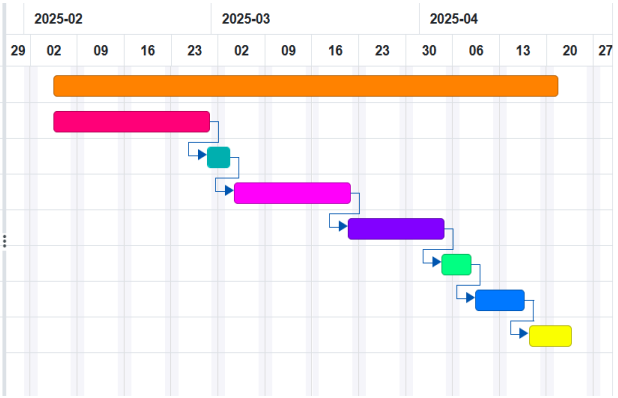
6 Expected Timeline

6.1 Work Breakdown Structure:



6.2 Gantt chart:

Task Name	Start	End	Durati...	Color
BDM Project	2025-02-05	2025-04-21	54 days	
Meeting with owner and Data Acquisition	2025-02-05	2025-02-28	18 days	
Project Proposal	2025-02-28	2025-03-03	2 days	
Data Collection	2025-03-04	2025-03-21	14 days	
Data Analysis	2025-03-21	2025-04-04	11 days	
Mid-Term Submission	2025-04-04	2025-04-08	3 days	
Final Analysis	2025-04-09	2025-04-16	6 days	
Final Report Submission	2025-04-17	2025-04-23	5 days	



7 Expected outcomes

7.1 Identification of Key Cost Drivers: Pinpoint which expenses (irrigation, fertilizers, labor) contribute most to Sham's rising costs, helping him prioritize cost-cutting efforts.

7.2 Potential Savings from Alternatives: Highlight opportunities to reduce irrigation costs (e.g., drip systems) and fertilizer expenses (e.g., manure) without compromising crop yield.

7.3 Labor Cost Optimization Strategies: Suggest ways to minimize labor expenses during peak seasons, such as using family labor or affordable tools.

7.4 MSP vs. Cost Analysis: Show how stagnant MSP prices and rising input costs shrink profits, urging Sham to adopt cost-saving practices.