



INDRAPRASTHA INSTITUTE *of*  
INFORMATION TECHNOLOGY DELHI

# DATABASE MANAGEMENT SYSTEM

Project Report

AgroMetrics



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# **PROBLEM STATEMENT**

In a world where the farmer's hard work is of such importance, there we find that they are unable to sell crops at reasonable prices or get information that would help them make smart choices. Traders also find it difficult as they also do not have many choices and cannot buy the best quality crops at reasonable prices. Moreover, the Government and Mandi House do not have data of crops bought or sold and the problems faced by farmers and traders.

Our platform will provide them with relevant data and assistance to ensure transparency in trade.

# **ABSTRACT**

Farmers are of prime importance to the Indian Economy. Their hard work is essential for the growth of any civilisation. This leads to the main motive behind building this application, which is to enable the farmers with powerful technology to protect themselves against any fraudulent activities and enable them to sell crops at competitive prices along with a proper guidance system which can potentially help them to grow and make informative decisions. The aim is to promote uniformity in agriculture marketing by streamlining procedures across the integrated markets, detaching information asymmetry between buyers and sellers and encouraging real-time price discovery based on actual demand and supply.

Together with well-designed RDBMS, a user-friendly interface, this application has the potential to assist farmers and traders. This allows the farmers who were paid less worth their crop prices to get paid above or equal to Minimum support price (MSP) regulated by the government. This also gives them the opportunity to see the list of government policies for which they are eligible. The analyst research team can analyse data about selling and buying pattern, crops growth etc. Moreover, farmers can track their growth and make informed decisions about their earnings. These all can lead to the effective growth of farmers both financially and mentally. Traders will also have a greater number of options to choose from and can buy the best quality crops at reasonable prices. The government can also ensure that prices paid to farmers are greater than MSP.

# **WEEK 1**

Ideation and finalisation of  
the Application, and  
identifying the  
stakeholders

(Work Division: All work was done together and  
everyone contributed equally)

# Project Description

A platform that connects farmers and traders to true digitalization thereby providing information to all stakeholders regarding agronomic data, helping the nation to take the agriculture industry towards modernization and to stop any fraudulent activity involved in the process. This will help build transparency in the system that will ultimately set new milestones in the economic growth of the country.

Not only the Farmers and traders can buy or sell the crops at reasonable rates, but they can also analyse their growth and get an informative decision to increase their earnings. Our platform connects various stakeholders such as Farmers, Traders, Mandi boards, FPOs, Government, Analysts, etc.

- 1) Farmers/Farmer's Group(FPOs) can easily sell their crop to traders for at least the minimum selling price set by Mandi boards.
- 2) All the stakeholders using our platform have access to the quality of the crops grown by the farmers.
- 3) It will ease/digitalize the transactions to prevent any exploitation of farmers.
- 4) The government can suggest farmers grow a particular type of crop according to the weather condition or soil type.
- 5) The government will regulate the functioning of the system.
- 6) Farmers, traders, Mandi boards can get loans easily from the banks under the supervision of Govt.
- 7) Farmers will have access to the policies they are eligible for, list new policies and new amendments made in the policies by the government.
- 8) All the complaints made by the farmers and traders will be resolved by the government or mandi boards.
- 9) Analysts can view the data and generate the report.
- 10) Farmers will get data for the crops they should grow to keep in mind various factors such as demand and supply, weather etc.

A very well designed database management system would be required to deploy a web app of the scope aforementioned.

# StakeHolders of the Application

- Farmers
- Traders
- Mandi Board
- Government
- FPO (Farmers Producers Organisation)
- Analysts

# **WEEK 2**

Roles of each Stakeholder  
and the purpose fulfilled  
by using the DB

(Work Division: All work was done together and  
everyone contributed equally)

# **FARMERS**

## **Roles**

- Get a platform to sell their products and receive fair and competitive wages.
- Get information about traders who are offering the highest price for a particular crop.
- Add and sell their crops.
- Get information about nearby markets.
- Keep track of crops sold by them seasonally.
- Suggestions for policy and schemes according to their income.
- Get suggestions about profitable crops according to land, projected demand, projected supply, and weather.
- Get information about which crops are currently in demand and their current price through supply, and demand.
- Get information about the fees charged by the Mandi board and take an informed decision about where he wants to sell his crops promoting transparency in trade.

## **Query**

1. What were the crops sold by me and what was the amount earned by me?
2. What was the profit made by me in a particular season?
3. What crops are popular among traders and which can I sell?
4. What is the Minimum Support price offered by the government for any given crop?
5. Find top traders to sell to according to the price they offer.
6. What are the fees charged by the Mandi Board?
7. What are the nearest/most popular markets according to my location?  
Also, Rate them so that others can make better choices.
8. What are the various loans and schemes offered to me by the government?



9. What is the required quality of a crop as prescribed by the Mandi Board/Trader?
10. Are there storage spaces available that are provided by Mandi board and what is the price charged, also make a request for storage space?
11. List of FPO which he can join or leave FPO that he is currently part of.

## **TRADERS**

### **Roles**

- Get a platform where they can buy crops on fair prices and according to wanted quantity and quality.
- Get information about Minimum Support Price(MSP) that they must pay for a particular crop.
- Get information about the fees charged by the Mandi board for each type of crop. Keep track of prices at different points of time.
- Keep track of places where crops can be bought. These places are rated according to trader satisfaction. (helps make informed decisions)
- Get information for the ways by which payment can be made.
- Receive support in the form: Information, Application for loan and register for complaints.
- Can specify what they would like to buy and in which season and the price that they are willing to pay.
- Areas which have maximum produce and minimum price.

### **Query**

1. What are the prices quoted by various farmers and find best(minimum) prices for a particular crop?
2. What is the variety of crops available to purchase?
3. What is the MSP that I have to pay for a particular crop?
4. How much fees would I be charged from mandi house for purchasing crops?

5. What are the nearest/best locations from where I can buy crops?
6. What are the crops purchased by me, seasonally?
7. Specify crop, its price and quality that they want to buy.

## **MANDI BOARD**

### **Roles**

- Keep track and update the list of crops which farmers and traders can trade on.
- Can update trading charges and MSP according to government orders.
- Get information on how much trading is done in a day by farmers and traders.
- Get information about prices and quality of crops at different points of time and can update the information according to demand and supply.
- Manage and Assign storage space provided by them.

### **Query**

1. Which crops farmers can sell and traders can buy from mandi boards?
2. What is the MSP and prices of different crops at different points of time and quality of crops?
3. What are the charges which farmers and traders have to pay?
4. What is the statistics of trading on any particular day?
5. What are the complaints or suggestions from farmers or traders?
6. Update the price of storage space and add details about the same?
7. What was the total amount earned in the form of fees charged from traders and farmers?

# **GOVERNMENT**

## **Roles**

- Regulate the MSP for different crops
- Monitor the quality of crops
- Make changes/updates in the policy made by them
- Monitor the charges collected by Mandi house
- Facilitating the agricultural value chain
- Government subsidy distributions
- Optimizing agricultural practice

## **Query**

1. What is the MSP of different crops on the website?
2. What fee different Mandi houses are charging from the traders and farmers?
3. What is the price of different crops in different mandi at different points of time?
4. Is there any complaint against any mandi house?
5. Data of different stakeholder means how many total registered users are farmers, how many are traders and mandi houses and from which state they are from?
6. Add/Update policies that are being offered to farmers and traders.
7. What percentage of farmers have grown the same crops as suggested by us?
8. What is our spending on providing subsidies to farmers?
9. How many farmers have applied for a particular loan provided by the government?

# **FPO (FARMER PRODUCER ORGANISATION)**

## **Roles**

- Selling their stocks as a whole to achieve better surplus individually to get the benefit of economies of scale.
- To give bargaining power as a whole to the FPO.
- To manage the track records of their sale.
- To distribute the profit based on the share of its members.

## **Query**

1. What are the details of members of FPOs?
2. Add/delete the members of FPOs.
3. To update the current stock after each purchaser.
4. What are the most demanded crops?
5. What are the prices of crops?

# **ANALYST**

## **Roles**

- Analyze the data consisting of prices charged by farmers, buying price of traders and Mandi Board, and data about various crops and predict profitable crops.

## **Query**

1. What are the popular crops in different states and how the production of different crops change with time?
2. What are the different incentives offered by the government and how many farmers are part of such incentives?
3. What are the trends of charges on trade charged by mandi boards?
4. Range of prices charged by traders and mandi boards.

5. Most popular crops.
6. Analyse how many farmers have applied for schemes and loans offered by the government.
7. Analyse which states have a high selling rate of crops.
8. Analyse the variation of MSP over the seasons for a particular crop.

# ENTITIES AND ITS ATTRIBUTES

Farmer
Farmer_ID
Name
Address
Land_Area
Crops
Income
Bank_Account_Number
Number_of_Transactions
FPO_ID_Linked_To
Storage
Total_Trade_Charges

Mandi Board
Mandi_Board_ID
Name
Location
Rating
Crops (Listed crops )
Trade_Charges
Registered Users(farmers and traders)
Storage
Crop traded with time and location
Revenue_trading
Revenue_storage_space

Crops
Crop_ID
Name
Price(MSP, Current Price, Previous Price)
Quantity_present(Price of crop per kg)
Quality
Sold_Quantity

Transaction
Transaction_ID
Sender_ID
Receiver_ID
Amount
Date_of_Transaction

FPO (Farmer Producer Organisation)
FPO_ID
FPO_Name
FPO_Registration_Date
State_and_District
Address
No_of_Members
members_List[]
FPO_Bank_Account
Major_Crops
storage

Government
Registered_FPOs
Registered_Mandi_House
Government_Spending_Per_Year
Subsidy_Distributions
Agronomic_Data
Regional_Production_Figures

Analyst
Analyst_ID
Name

<b>Policy</b>
Policy_ID
Name
Details
Implemented_on
Expires_on
Target_income

<b>Storage</b>
Storage_ID
Renter_Person_ID
Location
Charges
Time_From_To
Space

<b>Traders</b>
Trader_ID
Trader_Name
Pan_Number
Mobile_Number
Bank_Account_Number
Number_of_Transactions
Total_Trade_Charges

<b>Complaint</b>
Complain_Id
complain_from
complain_to
current_status
time_With_Date

<b>Coupon</b>
Coupon_ID
Value
Valid_Upto



# RELATIONSHIPS

- Mandi board ----- Farmer (many to many) trade relation.
- Mandi board ----- Trader (many to many) trade relation.
- Mandi board ----- FPO (many to many) trade relation.
- Mandi board ----- Government (many to one) regulate relations.
- Mandi board ----- Analyst (many to many) information-sharing relation.
- Farmers-----Crop table (one to one) crop information
- Farmers-----Government (many to one)
- Crop table(Mandi Board)-----farmers(one to many ) get-information ,trade relation.
- Crop table ----- Mandi Board(one to many) get-information ,trade relation.
- Crops table----- traders (one to many) get-information ,trade relation.
- Traders ----- Crops table with MSP(many to one)
- Traders ----- Farmers(many to many) trade relation
- Traders ----- Complain Table(many to one)
- Traders ----- Government (many to one) regulate tradition
- Government ----- FPOs (one to many) regulate tradition