



## COMPUTER SCIENCE & ARTIFICIAL INTELLIGENCE DEPARTMENT

### PROBLEM STATEMENT

#### DATANYX'24

**Problem Statement ID:** 1505

**Problem Statement Title:** Demand Forecasting and Inventory Optimization

**Domain:** AgroTech

#### Description:

**Azadpur Mandi**, the largest fruit and vegetable market in Asia, located in Delhi, India, handles massive sales daily, with an estimated annual turnover of over ₹5,000 crore (approx. \$600 million). However, for newcomers like **Danish**, setting up a profitable business is challenging due to the constant fluctuation in demand, varying market prices, and high food wastage. The diverse range of fruits and vegetables sold daily further complicates inventory management, leading to excess stock, spoilage, and lost revenue.

As Danish's friend and **agricultural data scientist**, you need to help him tackle these challenges by analyzing historical sales data, weather patterns, and market trends to predict future demand with high accuracy. By integrating these insights, we may improve logistics by making sure the appropriate quantities of fruits and vegetables are supplied in response to demand, reducing waste and surplus inventory.

You are given sample data, but you will need to collect relevant additional features like weather data, festival schedules, and local events that could impact demand. Next, you will need to preprocess the data to clean and structure it for analysis. Use data visualization tools to identify demand patterns and trends. Finally, implement machine learning models to forecast demand accurately, optimize stock levels, and minimize waste, leading to better profitability for Danish.

#### Target Audience:

- Fresh produce vendors and wholesalers at Azadpur Mandi and similar markets.
- Agricultural businesses involved in logistics, inventory management, and supply chain optimization.
- Retailers and farmers looking to better predict demand and minimize waste in the agro-industry.

**Sample Dataset:** [Link](#)

**Note:** The given link provides a sample dataset for reference and is not mandatory to use. You are free to choose any attributes and values, either building upon the provided dataset or using something else.