

# Ecom Express Pvt Limited

Hyderabad, Telangana

Supply Chain Management

# OVERVIEW

A Fast-Moving Consumer Goods (FMCG) company ventured into the instant noodles business two years ago. However, the higher management has observed a significant mismatch between demand and supply across various regions. In areas where demand is high, supply remains insufficient, leading to lost sales opportunities. Conversely, regions with lower demand experience excess inventory, resulting in increased storage costs, wastage, and financial losses for the company.

To address this challenge, the management aims to develop a data-driven supply chain optimization model that ensures efficient distribution of inventory across all warehouses nationwide. This model will leverage historical sales data, real-time demand forecasting, and predictive analytics to optimize stock levels dynamically. By integrating advanced machine learning techniques and supply chain analytics, the company seeks to minimize inventory costs, reduce wastage, and enhance overall profitability while ensuring product availability in high-demand areas.

This strategic approach will not only improve operational efficiency but also enhance customer satisfaction and market competitiveness.: Train dataset .

# GOALS

The objective of this project is to build a model, using historical data that will determine an optimum weight of the product to be shipped each time from the respective warehouse.

1. Focus on all steps of data science (EDA, data processing, model, evaluation, charts)
2. Highlight any trend in data, deep insight, novel steps that you take
3. Highlight next steps and improvements.
4. Apply 5 to 6 machine learning algorithms and evaluate it using Test dataset .

**Data Dictionary**

|  |  |
| --- | --- |
| **variable** | **Description** |
| **Ware\_house\_ID** | Unique Warehouse id where product is prepared for dispatch.  dtype: Object |
| **WH\_Manager\_ID** | Manager Id present in the warehouse dtype: Object. |
| **zone** | Zone of the Warehouse, dtype: String` |

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| **WH\_regional\_zone** | Regional Zone of the warehouse, dtype: Object |
| **num\_refill\_req\_l3m** | Refilling request received by the warehouse in the last 3 months, dtype: integer. |
| **transport\_issue\_l1y** | No. of transport issued for warehouse in last 1 year, dtype: integer. |
| **Competitor\_in\_mkt** | No. of competitors in the market, dtype: integer. |
| **retail\_shop\_num** | Number of retail shops who sell noodles produced by the warehouse, dtype: integer. |
| **wh\_owner\_type** | The warehouse is owned by the company or it is on rent, dtype: String. |
| **distributor\_num** | No. of distributor who works between warehouse and retail shops, dtype: integer. |
| **flood\_impacted** | Is the warehouse in a flood impacted area or not, dtype: integer. |
| **flood\_proof** | Flood\_proof: Warehouse is having flood proof indicator, dtype: integer. |
| **electric\_supply** | Does the warehouse have proper electric supply along with some power backup, dtype: integer. |
| **dist\_from\_hub** | distance from the warehouse to production |

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|  | hub, dtype: integer. |
| **workers\_num** | no. workers in the warehouse, dtype: integer. |
| **wh\_est\_year** | warehouse establishment year, dtype: integer. |
| **storage\_issue\_reported\_l3m** | storage issues reported by the warehouse in the last 3months. |
| **temp\_reg\_mach** | warehouse having temperature regulating machine indicator or not, dtype: integer. |
| **approved\_wh\_govt\_certificate** | Type of approval warehouse having been issued by government, dtype: Object. |
| **wh\_breakdown\_l3m** | Number of times the warehouse faces the breakdown in the last 3 months, dtype: integer. |
| **product\_wg\_ton** | Product weight, dtype: integer. |