Description :

Price optimization model is a model helping retail sellers in getting the right optimized price of products according to demand of consumers. The model is drafted to identify the optimized price of product on which sellers should sell to get optimum profit with maximum demands. For this the model is being trained for the sales data for the past 10 years, having various variables in which main variable are as follows :

| 23 | Order probability | order\_probability | float | Probability of getting the order |
| --- | --- | --- | --- | --- |
| 24 | Volume turnover | volume\_turnover | float | Turnover demand size |
| 25 | Demand Estimate | demand\_estimate | float | Demand in terms of units. |
| 26 | Optimized price range | optimized\_price\_range | range | The price range at which maximum protability can be obtained. |
| 27 | Profitability index | probability\_index | float | The index deptincting about profitability. |
| 28 | Profitability | profitability | float | The volumatric profit |

PFA attached link herewith for the data file :

<https://github.com/Iamkrmayank/Price-Optimisation-Model/blob/main/Dataset_modified_pom.csv>

The model is devised in order to predict the demand and optimized price using the historical data. For this demand prediction and price estimation various prediction models are used, which are mentioned as below:

1.Linear Regression

2.Extra Trees

3.Decision Trees

4.Gradient Boosting

5.HistGBM

6.k-Nearest Neighbor

7.XgBoost

8.Random Forest Regressor

9.Simple Mean Model

10.Simple Median Model

11.LightGBM

12.Arima Model

13.Naive Bayes Model

For the prediction following formulation are done :

Base Price : The price at which 75% of order demand can be fulfilled.

Bp : 0.75( Sum (Dr’s x Price at Dr’s )

Order probability : Probability of Orders

Po : Estimated demand at selected price / Total Demand

Turnover : Area under the curve of demand and price curve for a particular date

Optimized Price Range: Derivative index of Price and demand ( A range is outcome )

Profitability : Demand at selected Price x Selected Price - Demand at MSP x MSP