WEEK 5

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Marketing Analytics
Concepts

1. What is Pricing Analytics ?

It is the process of collecting and analyzing data related to market dynamics, customer behavior, competitor strategies, and historical sales to determine optimal prices that maximize revenue and profitability

2. What are the importance of Pricing Analytics ?

1. New Product Development
2. Profitability
3. Strategic Decisions

3. What are the steps in Pricing Analytics ?

1. Survey / Feedback
2. Elasticity of Demand
3. Competition Analysis

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4. What does price elasticity of demand measure?

It measures how sensitive customer demand is when price changes

5. How do you interpret outcomes of price elasticity of demand ?

If PED > 1 → Elastic Demand (Customers are very sensitive to price)
if PED < 1 → Inelastic Demand (Customers are not very sensitive to price)
if PED = 1 → Unit Elastic (Demand changes proportionally with price)

6. What is formula for price elasticity of demand ?

$$PED = \frac{\%\Delta \text{Quantity Demanded}}{\%\Delta \text{Price}}$$

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7. What are Loops in Python ?

Loops in Python are control flow statements that allow a block of code to be executed repeatedly.

8. What are two types of loops?

Python primarily offers two types of loops:

1. for loops
2. while loops.

9. Why do we use for loop ?

A for loop is used to iterate over a sequence (such as a list, tuple, string, or range). They execute a block of code for each item in the sequence.

10. Why do we use while loop ?

A while loop repeatedly executes a block of code as long as a given condition remains true. The condition is checked before each iteration.

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11. What is Standardization ?

It is the process which transforms independent features to have a mean of 0 and a Standard Deviation of 1

12. How do we Standardize data ?

$$z = \frac{x - \mu}{\sigma}$$

- x is the original data point,
- μ is the mean of the feature, and
- σ is the standard deviation of the feature.

13. When do we perform standardization ?

1. Features have different units or scale (eg: g, kg, ml, lts)
2. The algorithm relies on distance metrics (Eg: One Data Point How Far From Other
3. Principal Component Analysis (It tries to find the directions of maximum variance of data)

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14. When do we not perform Standardization ?

1. Tree-based algorithms
2. Interpretability

15. What is one hot encoding ?

One-hot encoding is a technique used to convert categorical data into a binary format where each category is represented by a separate column with a 1 indicating its presence and 0 for all other categories.

16. How does One Hot Encoding Happen in Backend ?

Color
Red
Green
Blue

→

Color	Red	Green	Blue
Red	1	0	0
Green	0	1	0
Blue	0	0	1

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17. To predict the price of the product, which Regression do we use ?

Linear Regression

18. To perform Standardization, which library do we need to import ?

```
from sklearn.preprocessing import StandardScaler
```

19. To perform OneHotEncoding, which library do we need to import ?

```
from sklearn.preprocessing import OneHotEncoder
```

20. To transform the columns, which library do we need to import ?

```
from sklearn.compose import ColumnTransformer
```

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21. To create a pipeline in model, which library do we need to import ?

```
from sklearn.pipeline import Pipeline
```

22. How to import Linear Regression Library in Python ?

```
from sklearn.linear_model import LinearRegression
```

23. How to import the module that helps us in Training and Testing the data ?

```
from sklearn.linear_model import train_test_split
```

24. In case of excessive competition in the market how do we decide which price to consider ?

We compare the price predicted by Linear Regressing with Price Elasticity of Demand and select pricing which ever is low. But in case of excessive competition we calculate pricing by selecting range of min and max values and substitute it in for loop to get lowest price.