DATA SCIENCE

Delivery Time Analysis for an E-commerce Company:

Question 1: Calculate Q1 and Q3

$$Q1=0.25\times(n+1)$$ Q1 = 0.25 \times (n+1) $$Q1=0.25\times(n+1)$$ $$Q3=0.75\times(n+1)$$ Q3 = 0.75 \times (n + 1) $$Q3=0.75\times(n+1)$$

- Q1 = 4th value → 40
- Q3 = 11th value → 75

Question 2: Find the IQR

$$IQR=Q3-Q1=75-40=35$$

Question 3: Detect Outliers

$$\text{Lower Bound}=Q1-1.5\times IQR$$ {Lower Bound} = Q1 - 1.5 \times IQR $$\text{Lower Bound}=Q1-1.5\times IQR$$ $$\text{Upper Bound}=Q3+1.5\times IQR$$

{Upper Bound} = Q3 + 1.5 \times IQR $$\text{Upper Bound}=Q3+1.5\times IQR$$

2.QUESTION-MEAN, MEDIAN, MODE:

Mean:
45+50+55+60+60+62+63+65+90+9510=65.5{45 + 50 + 55 + 60 + 60 + 62 + 63 + 65 + 90 + 95}{10} = 65.51045+50+55+60+60+62+63+65+90+95=65.5

- **Median: Middle value = (60+62)/2=61(60 + 62) / 2 = 61(60+62)/2=61**
- **Mode: 60 (Occurs twice)**

3.FREQUENCY TABLE:

Answer:

Number of Customers	Frequency
5	2
10	2
8	1
12	1
14	1
15	1
18	1
20	1

4.DETECT MULTICOLLINEARITY:

- Calculate the Variance Inflation Factor (VIF).
- VIF > 10 indicates multicollinearity.

- **Answer: High VIF means the variables are correlated, impacting model accuracy.**

5.HYPOTHESIS TESTING:

- H0: The medicine doesn’t lower blood pressure.
- H1: The medicine lowers blood pressure.

- **Do a T-Test:**
  - Find the p-value (a number that shows how likely the result happened by chance).
  - If p-value < 0.05, it means the medicine likely works.
- **Final Answer:**

- If the p-value is small, the medicine is effective.

6.DETECTING OUTLIERS:

- Calculate the Interquartile Range (IQR).
- Step 2: Identify outliers using the formula:
  Outliers=(Data<Q1−1.5×IQR) or (Data>Q3+1.5×IQR)
- Outliers = (Data < Q1 - 1.5 \times IQR) {or } (Data > Q3 + 1.5 \times IQR)
- Outliers=(Data<Q1−1.5×IQR) or (Data>Q3+1.5×IQR)

7. Understanding Customer Satisfaction:

Answer:

- Find the Mode to see the most common rating.
- Calculate the Mean and Median for further insights.