

## Project Design Phase

### Preprocessing Steps and Business Questions with Visualization

Date	02 February 2026
Team ID	LTVIP2026TMIDS50904
Project Name	Strategic Product Placement Analysis: Unveiling Sales Impact with Tableau Visualization
Maximum Marks	5 Marks

#### Data Preprocessing Steps:

- **Dataset Understanding:** The retail dataset contains product placement, pricing, promotions, foot traffic, seasonality, and sales volume.
- **Missing Value Handling:** The dataset was verified and missing values were handled using appropriate techniques such as mean or mode replacement.
- **Categorical Encoding:** Categorical variables like product position, promotion, foot traffic, and seasonality were converted into numerical form using label encoding.
- **Feature Scaling:** Numerical attributes such as price and competitor price were scaled using standardization to improve model performance.
- **Feature Selection:** Irrelevant or redundant attributes were removed to enhance model accuracy and efficiency.
- **Final Dataset Preparation:** The cleaned and transformed dataset was prepared for visualization and machine learning analysis.

#### Business Questions and Visualization Approach:

- Which product placements generate the highest sales?
- Visualized using bar charts comparing sales across placement types?
- How do promotions impact sales volume?
- Analyzed using comparative bar charts and donut charts?
- What is the effect of foot traffic on sales?
- Visualized using stacked bar charts and heat maps?
- How does seasonality influence product sales?
- Analyzed using line charts and bar charts across seasonal conditions?
- Which product categories perform best in high-visibility locations?
- Visualized using bubble charts and category-wise bar charts?

## **Visualization Tools Used:**

- Bar Charts for sales comparison
- Donut Charts for promotion impact analysis
- Heat Maps for foot traffic analysis
- Bubble Charts for category-wise performance
- Tableau Dashboards and Stories for interactive insight