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| **Date** | 16-06-2025 |
| **Team ID** | LTVIP2025TMID48265 |
| **Project Name** | Strategic Product Placement Analysis: Unveiling Sales Impact with Tableau Visualization |
| **Maximum Marks** |  |

**Data Flow Diagram (DFD)**

**Level 0 – Context Diagram Description:** This is the highest-level overview of the Strategic Product Placement Analysis system. It shows how external users interact with the system.

* **Entities:**
  + Retail Analyst (User)
  + Tableau System
  + Stakeholders/Decision-Makers
* **Data Flows:**
  + Analyst provides sales and product placement data
  + System processes data and generates visual insights
  + Stakeholders receive insights in dashboards or reports

[Retail Analyst] --> (Strategic Product Placement Analysis System) --> [Stakeholders]

**Level 1 DFD Description:** This level breaks down the internal data analysis process:

* **Process 1: Import Raw Data**  
  Analyst imports structured sales data (CSV, Excel) into Tableau. This data includes metrics such as item ID, placement, quantity sold, and demographic info.
* **Process 2: Define Metrics and Filters**  
  Analyst creates calculated fields (e.g., Sales per Shelf, Endcap Boost %) and applies filters (e.g., Region, Month).
* **Process 3: Build Visuals and Dashboards**  
  Visualizations are created using Tableau’s interface—bar charts, heatmaps, scatter plots—to understand placement trends.
* **Process 4: Generate Reports and Stories**  
  A Tableau Story or Dashboard is constructed and shared.
* **Process 5: Embed in Web App**  
  The dashboard is embedded into a Flask application for organizational access.
* **Process 6: Review and Iterate**  
  Stakeholders provide feedback; dashboards are updated.

This DFD clarifies how Tableau and supporting tools are used throughout the product placement analysis pipeline, ensuring transparency and traceability of insights from raw data to business impact.

**Level 1 – Detailed DFD for Strategic Product Placement Analysis**

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| **Step** | **Process** | **Input** | **Output** | **Data Store** |
| 1 | Import Sales & Product Data | Raw CSV/Excel sales dataset (with placement info) | Parsed, structured dataset in Tableau | Sales\_Dataset |
| 2 | Define Metrics & Filters | Structured dataset | Calculated Fields (e.g., Avg Sales, Endcap Efficiency, etc.) | Calculated\_Fields |
| 3 | Build Visualizations | Calculated fields, filtered data | Visuals: bar charts, heatmaps, scatter plots | Visualization\_Assets |
| 4 | Generate Dashboard & Stories | Visualizations | Tableau Dashboard / Story | Dashboards\_Repository |
| 5 | Embed Dashboard to Web App | Final Dashboard (from Tableau) | Web-embedded Dashboard via Flask | Published\_Dashboards |
| 6 | Receive Feedback and Iterate | Stakeholder feedback | Improved visuals, new filters, updated KPIs | Revised\_Tableau\_Workbooks |

**Explanation of Each Process in Your Project Context:**

1. **Import Sales & Product Data**
   * Input: Raw data files containing sales, shelf placement, store zones, and footfall.
   * Output: Tableau ingests this data, validates it, and structures it for analysis.
2. **Define Metrics & Filters**
   * Calculated KPIs like **"Sales per Footfall"**, **"Shelf-to-Sales Ratio"**, and filters by **Region**, **Season**, etc., are created to isolate specific trends.
3. **Build Visualizations**
   * Graphs such as **heatmaps**, **bar charts**, and **scatter plots** visually represent placement effectiveness and customer behaviour.
4. **Generate Dashboard & Stories**
   * These dashboards group multiple visuals for executive-level insight, while Tableau Stories guide the viewer through the narrative of key findings.
5. **Embed Dashboard to Web App**
   * Using **Flask**, the final dashboard is published internally or externally, ensuring access for decision-makers.
6. **Receive Feedback and Iterate**
   * End-users request improvements (e.g., new views or more granular filters), and the workbook is refined based on business needs.