

An internship in
Data Analytics with Tableau

by

SmartInternz

Project Name: Strategic Product Placement Analysis: Unveiling Sales Impact

Project Id: LTVIP2025TMID48762

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Team Members:

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BONAM VENKATA CHALAMAYYA ENGINEERING COLLEGE
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(Approved by A.I.C.T.E, New Delhi & Permanently Affiliated to J.
N.T.U.K, Kakinada) (Accredited by N.B.A & NAAC with 'A' Grade)
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I also thank SmartInternz for granting access to valuable learning materials and activities that helped me improve my skills. I am grateful for the guidance and feedback from the team during this journey.

Finally, I appreciate the support from Andhra Pradesh State Council of Higher Education (APSCHE) and all those who contributed to the success of this internship, as well as my mentors and peers for their continued encouragement.

ABSTRACT

This project, titled “Visualizing Housing Market Trends: An Analysis of Sale Prices and Features using Tableau,” focuses on transforming complex real estate data into clear, actionable insights through interactive data visualization. By cleaning and preparing a dataset containing various housing attributes—such as sale price, area, number of bedrooms, renovation status, and location—key trends were uncovered using Tableau’s powerful visual analytics. The project involved the creation of calculated fields, the use of filters , and the development of dashboards and stories that narrate insights across multiple dimensions. These dashboards were then embedded into a Flask web application, ensuring easy accessibility and deployment. The resulting solution empowers users—including buyers, real estate agents, and policy makers—to make data-driven decisions. With its scalability and modular structure, the project lays a foundation for further enhancements like live data integration, predictive analytics, and expanded geographic coverage.

Key Words:

- Tableau Dashboard
- Housing Market Analysis
- Data Visualization
- Sale Price Prediction
- Property Features
- Renovation Insights

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1. Introduction

This project investigates how product positioning affects sales performance and consumer behavior. By using Tableau, we analyze sales data, placement strategies, and customer demographics to uncover meaningful insights. The goal is to understand which positioning methods drive the most revenue and customer engagement. These insights will help businesses improve marketing strategies and optimize product visibility. The findings can be applied across industries such as retail, entertainment, and advertising to enhance decision-making and growth.

1.1. Project overviews

This project aims to investigate the relationship between product positioning, sales performance, and consumer behaviour. Using Tableau, we will analyse data to uncover insights into how different positioning strategies impact sales and consumer preferences. By visualizing the data, we aim to provide actionable recommendations to optimize product positioning strategies and drive revenue growth.

A retail company wants to understand the impact of product positioning on its sales and consumer behaviour. They have collected data on sales figures, product placement, and consumer demographics. They seek insights into which product positioning strategies are most effective in driving sales and how they can tailor their marketing efforts accordingly. Through data visualization with Tableau, the company hopes to gain actionable insights to improve its product positioning strategies and increase revenue.

Scenario 1. Film and Television Production Companies: Production companies can utilize strategic product placement analysis to optimize revenue generation through partnerships with brands. By employing Tableau visualization, they can analyse the effectiveness of product placements in different scenes or episodes. This analysis can help them negotiate better deals with brands, understand audience engagement with specific products, and make data-driven decisions on future placement opportunities.

Scenario 2. Retail and Consumer Goods Companies: Retailers and consumer goods companies can leverage strategic product placement analysis to enhance their marketing strategies and boost sales. By using Tableau visualization, they can track the performance of products placed in various locations within their stores or on their websites. They can identify high-traffic areas, understand customer preferences, and optimize product placement to increase visibility and drive conversions.

Scenario 3. Advertising Agencies: Advertising agencies can benefit from strategic product placement analysis to provide valuable insights to their clients and optimize advertising campaigns. By utilizing Tableau visualization, they can analyse the impact of product placements in different media channels such as movies, TV shows, or online videos. This analysis can help them demonstrate the ROI of product placement initiatives, refine targeting strategies, and improve campaign effectiveness for their clients.

1.2. Objectives

- To analyse the impact of product placement strategies on sales performance using data visualization tools like Tableau. Analyse the effect of renovations on property value
- To identify consumer behaviour patterns based on demographics, foot traffic, and pricing sensitivity. Create interactive Tableau dashboards to present findings effectively.
- To generate actionable insights that help optimize product positioning in physical and digital retail environments.
- To provide data-driven recommendations that support marketing, merchandising, and inventory decisions to boost overall revenue.
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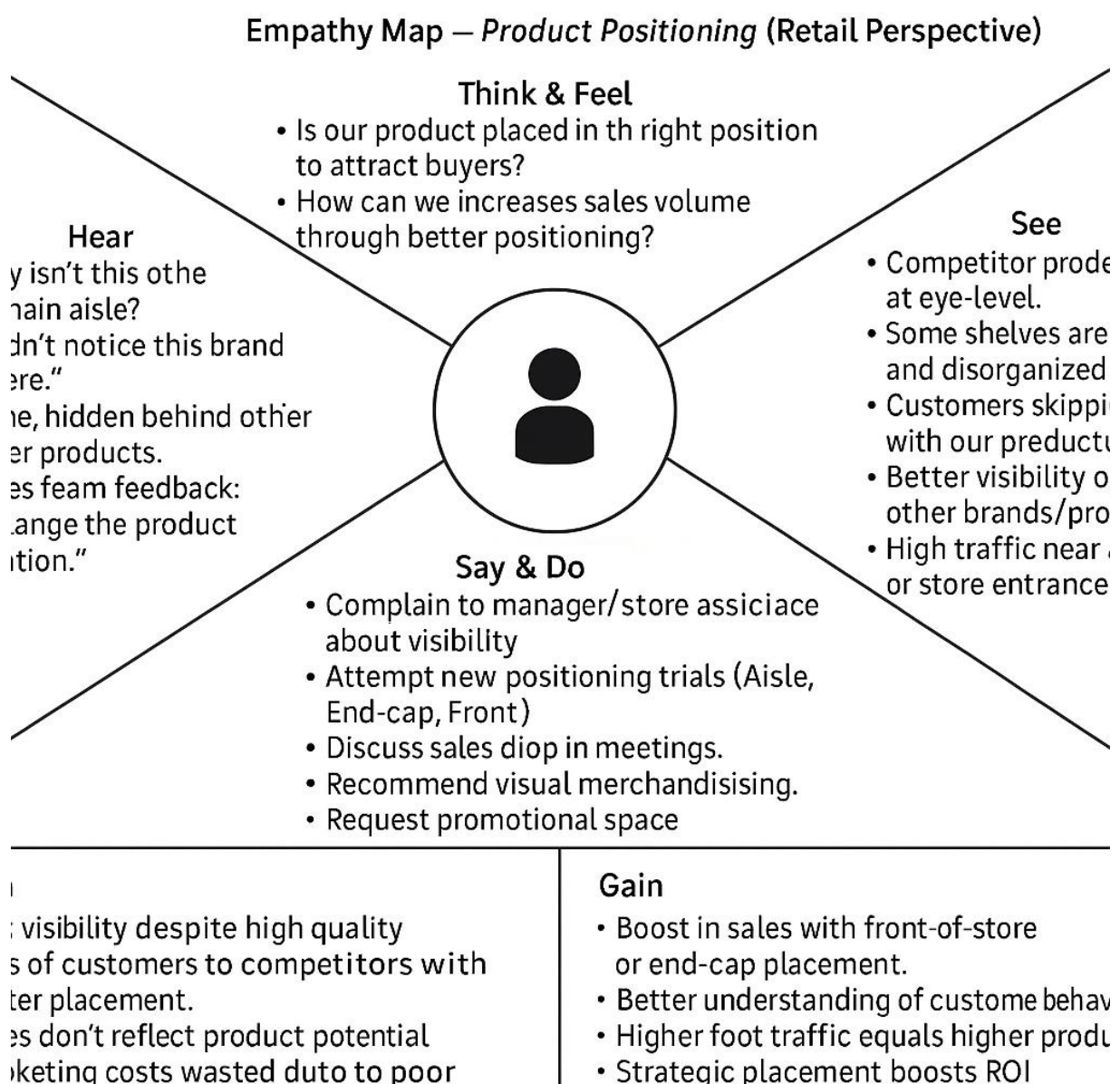
2. Project Initialization and Planning Phase

2.1. Define Problem Statement

Problem Statement (PS)	I am (Customer)	I'm trying to	But	Because	Which makes me feel
PS-1	A retail manager aiming to improve shelf performance	Identify which product positions (aisle or end-cap) generate higher sales	The sales performance varies widely across store locations	There is no visual dashboard to compare shelf position effectiveness	Frustrated and uncertain about how to optimize store
PS-2	A marketing analyst working on pricing strategy	Understand how pricing vs. competitors affects consumer purchases	The dataset is large and difficult to interpret manually	No tool visualizes the relationship between pricing and sales across demographics	Confused and unable to confidently plan targeted promotions

PS-3	A retail strategist tasked with maximizing category revenue	Segment sales data based on foot traffic and consumer type	Consumer responses differ by category and demographic	There is no interactive way to analyse sales trends by consumer group and location	Inefficient in tailoring strategies to target audiences
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2.2 Empathy Map Canvas



2.3 Brain Storming

Step 1: Individual Contribution and Problem Statement

As a solo contributor, I explored real-world retail challenges focusing on how product placement, pricing, and consumer demographics influence purchasing behaviour. Through initial brainstorming and dataset review, I identified the potential of Tableau dashboards to uncover actionable insights that guide shelf positioning and promotional strategies.

Problem Statement:

How can product positioning, pricing, and consumer behaviour be visualized and analysed using Tableau to identify trends, drive targeted marketing strategies, and improve retail sales performance.

Team Member:

- Team Leader: Siva Satya Trinadh Gorrela

Step 2: Brainstorming, Idea Listing, and Grouping

S.No	Idea Description	Category
1	Visualize sales volume by product category and shelf position	Placement Insights
2	Analyse sales performance for “More Expensive” vs “Same Price” tags	Pricing Strategy
3	Compare consumer group preferences using demographic filters	Consumer Segmentation
4	Visualize sales trends across different foot traffic levels	Traffic-Based Strategy
5	Create Tree Map to display sales by demographic and traffic zone	Multi-dimensional Visual
6	Add calculated fields: Price Flag, Sales Category	Data Preparation
7	Use stacked bar charts for category-wise pricing comparisons	Visual Design
8	Combine visuals into one interactive dashboard	Dashboard Integration

S.No	Idea Description	Category
9	Add filters for Foot Traffic, Shelf Position, Demographic Group	Interactive Exploration
10	Build a Tableau Story for presentation of insights	Storytelling & Reporting
11	Highlight underperforming segments using conditional formatting	Sales Gap Analysis
12	Enable insights export for strategic decision-making	Business Use Case

Step 3: Idea Prioritization Table

S.No	Idea Description	Impact	Feasibility	Priority
1	Visualize sales volume by product category and shelf position	High	Easy	High
2	Analyse sales for “More Expensive” vs “Same Price”	High	Easy	High
3	Compare consumer group preferences by demographic	High	Medium	High
4	Visualize by foot traffic level	Medium	Easy	High
5	Create Tree Map by demographic and traffic zone	High	Medium	High
6	Add calculated fields for insights	Medium	Easy	High
7	Use stacked bar chart for pricing comparison	High	Easy	High
8	Build interactive dashboard	High	Medium	High
9	Add filters (traffic, demographics, promotion)	Medium	Easy	Medium
10	Build Tableau Story for presentation	Medium	Medium	Medium
11	Highlight underperforming segments	High	Medium	Medium
12	Enable export for insights	Medium	Easy	Medium

3. Requirement analysis

3.1 Customer Journey map

Customer Journey Map: Housing Market Trends Dashboard

Stage	Actions & Touchpoints	Experience & Emotions	Pain Points	Opportunities	User Goals
Awareness	- Sees Tableau dashboard via shared link or internal demo- Reads dashboard summary	Curious, Interested	Unclear if the dashboard shows useful KPIs	Use engaging titles and clear preview visuals	Attract interest, clarify purpose
Consideration	- Clicks link to open dashboard- Starts reading layout and exploring design	Engaged, Cautious	Unfamiliar layout or unclear chart titles	Add tooltips and guided section descriptions	Understand visual layout and filters
Exploration	- Uses filters (e.g., traffic level, pricing, shelf position)- Views Tree Map/Bar Charts	Excited, Inquisitive	Filters not obvious; chart colours overwhelming	Use intuitive dropdowns and color-coded legends	Discover insights through segmentation
Decision	- Exports screenshots- Shares link with team- Saves dashboard for future use	Satisfied, Confident	Export buttons not easily found or low resolution	Add download/export instructions and print view	Save and present findings to others

Stage	Actions & Touchpoints	Experience & Emotions	Pain Points	Opportunities	User Goals
Retention	- Revisits updated dashboard-Shares feedback to improve it	Loyal, Empowered	No notification of updates or response to suggestions	Enable email updates or embed feedback forms	Stay engaged and contribute to continuous improvement

3.2 Solution Requirements

Functional Requirements (FRs)

FR No.	Functional Requirement (Epic)	Sub Requirement (Story / Sub-Task)
FR-1	Data Import	- Import CSV dataset (Product Positioning.csv)- Prepare fields in Tableau
FR-2	Data Cleaning & Transformation	- Create calculated fields: Price Flag, Sales Category- Handle missing fields if any
FR-3	Data Visualization	- Build Tree Map, Bar Chart, Dashboard- Design visual KPIs for segments
FR-4	User Interaction	- Add filters: Traffic, Promotion, Shelf Position, Demographics
FR-5	Insights Export	- Enable visual export (PDF, PNG)- Allow embedding Tableau Public link
FR-6	Feedback Integration	- Collect and respond to user feedback (if embedded in web app)

Non-Functional Requirements (NFRs)

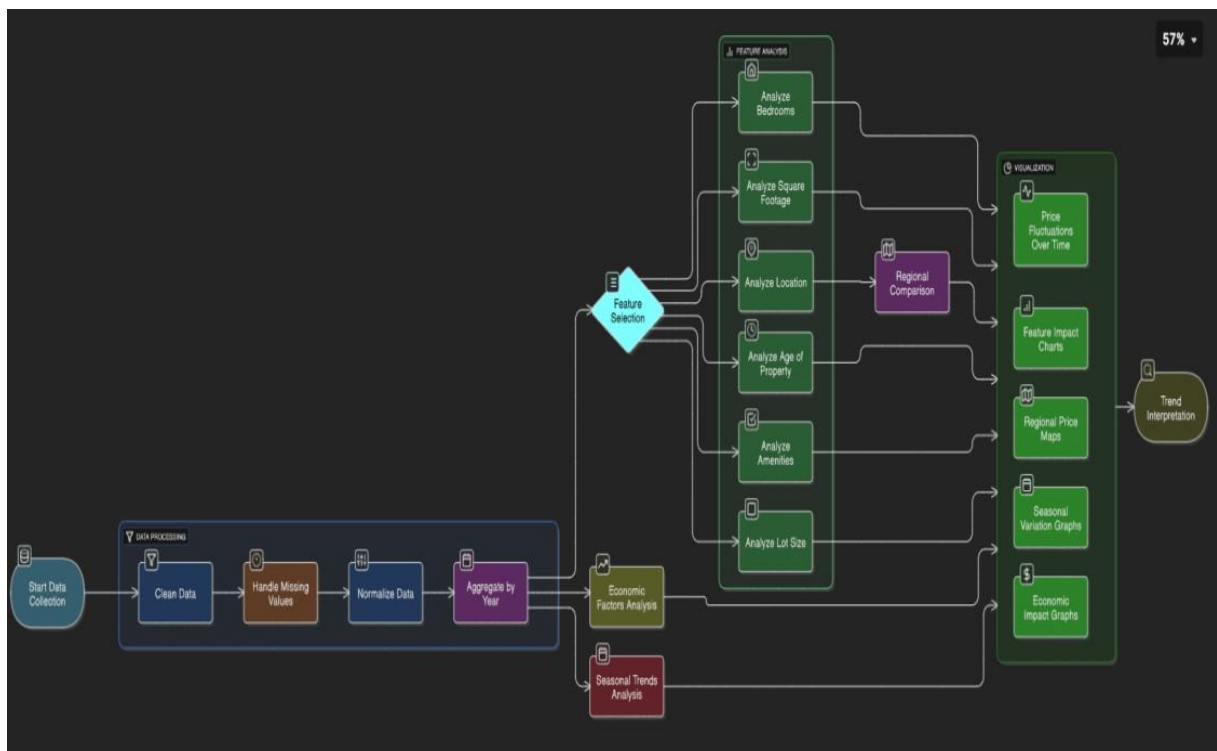
NFR No.	Non-Functional Requirement	Description
NFR-1	Usability	Dashboard should be clean, easy to navigate, and beginner-friendly
NFR-2	Performance	All visualizations must load quickly, even with filters applied
NFR-3	Availability	Tableau Public dashboards should be accessible across browsers and devices
NFR-4	Scalability	New filters (e.g., brand, region) should be easy to add without redesigning
NFR-5	Compatibility	Should work smoothly on different resolutions and screen sizes

NFR No.	Non-Functional Requirement	Description
NFR-6	Documentation	Report must accompany visuals, explaining each chart's insights and usage

3.3 Data Flow Diagram

A Data Flow Diagram (DFD) is a traditional visual representation of the information flows within a system. A neat and clear DFD can depict the right amount of the system requirement graphically. It shows how data enters and leaves the system, what changes the information, and where data is stored.

1. Data collected from the retail sales system in CSV format (Product Positioning dataset).
2. Cleaned and transformed in Tableau, with calculated fields like Price Flag and Sales Category.
3. Visualizations built in Tableau using multiple worksheets including Tree Map and Bar Charts.
4. Users review the dashboard and may request changes for improved filtering or insights.
5. Final version published on Tableau Public or saved locally after stakeholder approval.

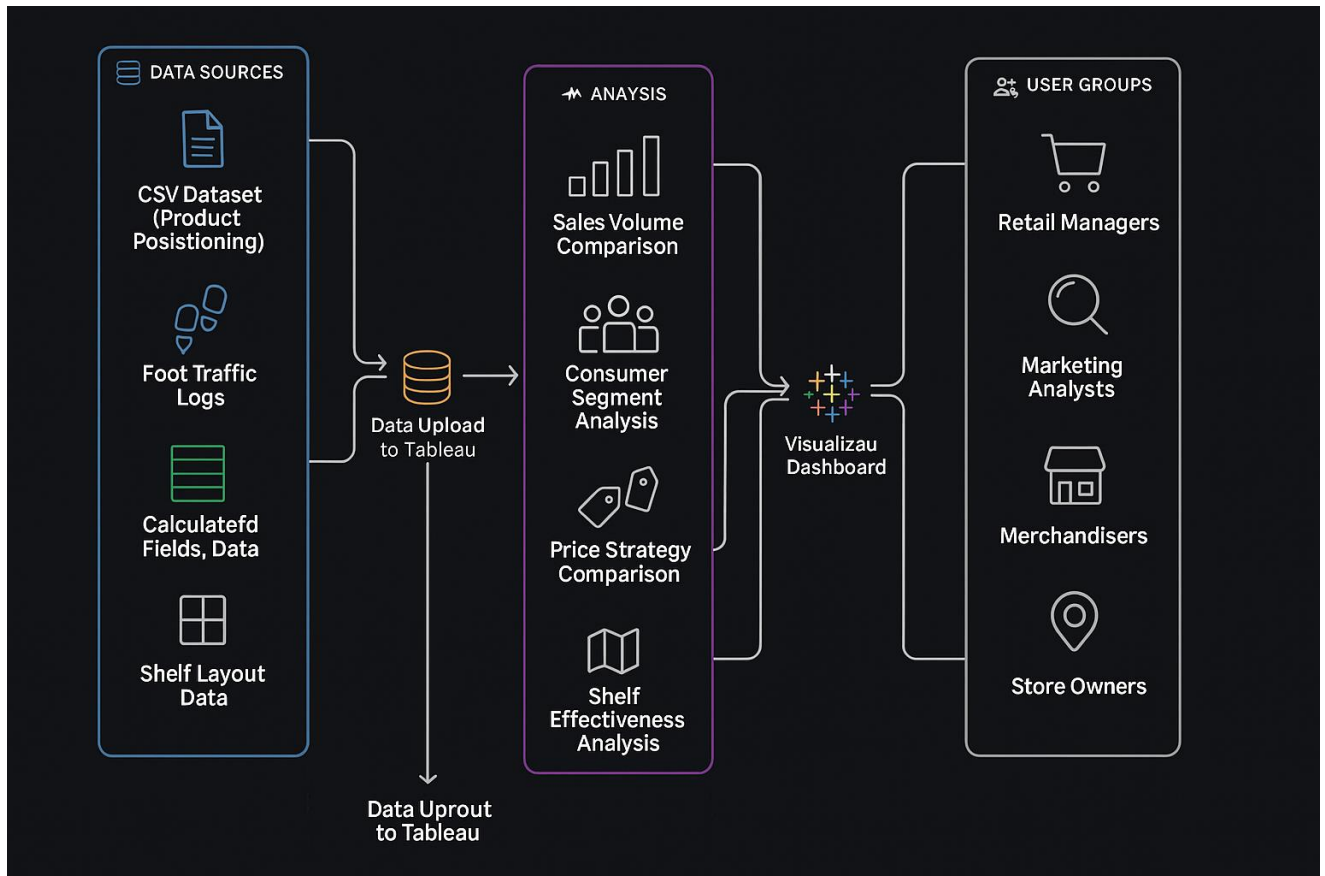


Functional User	User Type	Requirement	Story Number	User Story / Task	Priority	Release (Epic)	Acceptance Criteria
Analyst	Retail Manager	Filter by shelf position, traffic	USN-1	As a user, I want to filter and view product sales based on shelf position and traffic levels	High	Sprint-1	I can filter and view sales charts by shelf position and traffic level
Analyst	Marketing Analyst	Compare pricing strategies	USN-2	As a user, I want to compare products marked as “More Expensive” vs “Same Price” to evaluate impact	High	Sprint-1	I can see bar charts comparing pricing strategies across categories
Policy Maker	Strategy Planner	Analyse consumer group behaviour	USN-3	As a user, I want to analyse how different demographic groups respond to placement and pricing	Medium	Sprint-2	I can filter dashboards by consumer group and view corresponding trends
Developer	Dashboard Builder	Connect and update data	USN-4	As a user, I want the Tableau dashboard to be connected to a live or updatable dataset	Medium	Sprint-2	The dashboard pulls data automatically from a source (CSV or DB)
Retail Consultant	Decision Maker	Visual storytelling with dashboards	USN-5	As a user, I want to view a summary story of key insights for	High	Sprint-3	A Tableau Story dashboard is available with key highlights

Functional User	User Type	Requirement	Story Number	User Story / Task	Priority	Release (Epic)	Acceptance Criteria
				decision-making			
Developer	Export Tools	Download insights	USN-6	As a user, I want to export visuals as PDF or PNG for presentations	Low	Sprint-3	Export buttons are available and functioning properly

3.4 Technology Stack

Layer	Technology / Tool	Purpose
Data Source	CSV File (Product_Positioning.csv)	Contains product data including pricing, placement, sales, and demographics
Visualization Tool	Tableau Public	Used for building interactive dashboards, Tree Maps, and bar charts
IDE (optional)	Microsoft Excel / Python (optional)	Used for data cleaning or additional processing if required
Reporting Tool	Microsoft Word	Used for documenting insights, writing project reports, and exporting results
Deployment (optional)	Tableau Public URL or Flask (for embedding)	Allows dashboard access via browser or app integration
Version Control	GitHub (optional)	For storing code versions, screenshots, and report files (if used)



4. Project design

4.1 Problem Solution Fit

The Problem-Solution Fit refers to identifying a specific challenge faced by retailers and ensuring that the proposed data-driven visualization approach using Tableau effectively addresses that challenge. This phase helps retailers, analysts, and decision-makers recognize patterns in consumer behaviour and shelf performance, guiding them toward practical, impactful solutions.

Purpose:

- ☐ Identify and solve challenges related to product visibility, pricing strategy, and shelf placement using visual data exploration.
- ☐ Enable faster and more confident decision-making by aligning product strategies with actual customer behaviour and sales trends.
- ☐ Enhance marketing and promotion strategies by uncovering data-backed patterns in consumer preferences across demographics.

- ❑ Improve business outcomes by highlighting underperforming areas and maximizing shelf space efficiency.
- ❑ Help stakeholders understand the current retail dynamics and apply optimizations to increase sales and consumer satisfaction.

SSERWEFMS	Customer segments) CS <ul style="list-style-type: none"> • Retail store managers • Category or merchandising leads • Marketing or promotion analysts • Product positioning consultants <p>It helps entrepreneurs, artists and decision-makers drive</p>	6 Technical/customer const. CC <ul style="list-style-type: none"> • Limited experience with BI tools like Tableau • Reliance on outdated spreadsheet-based workflows • No clear way to link shelf position and sales visually • Limited focus on free-time non-coding-based platforms
	JOBS-TO-BE-DE PROBLEMS J&P <ul style="list-style-type: none"> • Understand which shelf positions (aisle vs, end-cap) boost product visibility • Analyze sales impact of pricing ("More Expensive" vs. "Same Price") • Segment consumer behavior by demographics and foot traffic • Identify poor-performing product placements 	7 Behaviour BE <ul style="list-style-type: none"> • Make placement decisions based on habit or past success • Use Excel to generate static reports • Rely on category manager intuition • Limited cross-team collaboration on insights
HEBK SOELTOMS	3 TRIGGERS TR <ul style="list-style-type: none"> • Declining sales for certain categories • Unstructured promotions with inconsistent outcomes • Pressure to justify shelf space to manufacturers 	R. Root cause <ul style="list-style-type: none"> • No interactive platform to explore shelf, pricing, and foot traffic in one view • Including TreeMaps, stacked bar charts in filters for exploration • Helps marketers and managers make visual comparisons by segment
		10 YOUR SOLUTION SL <p>A Tableau-based interactive dashboard</p>

4.2 Proposed Solution

Proposed Solution Template

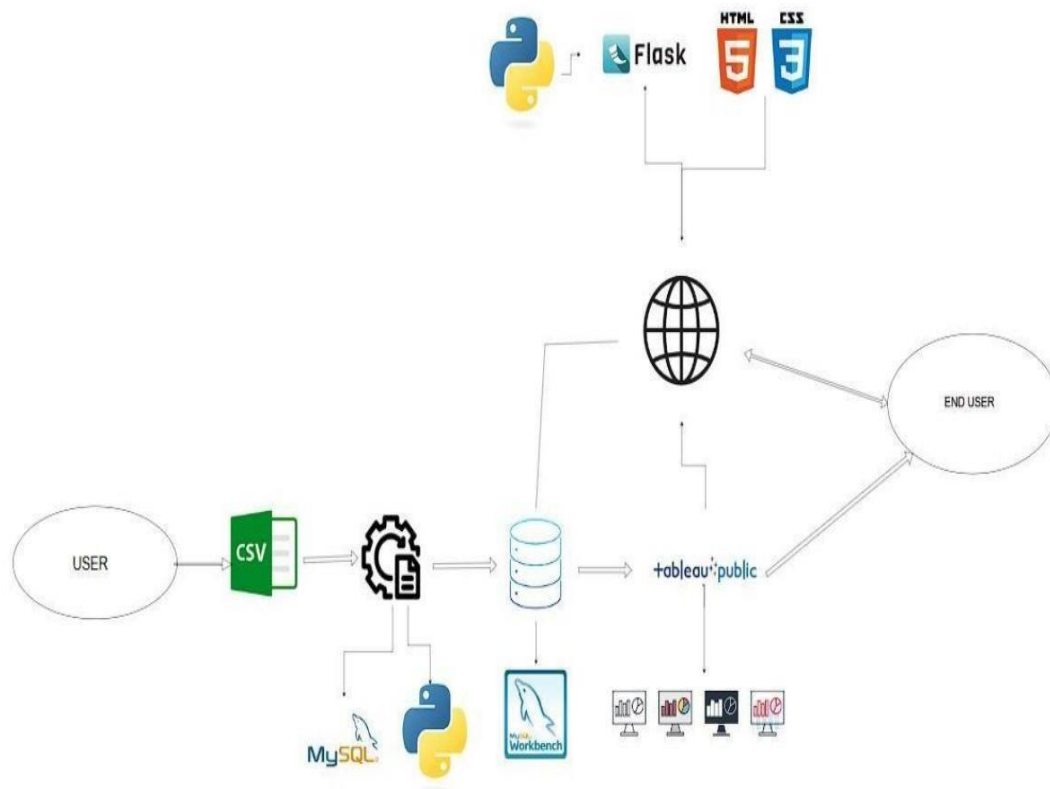
S.No.	Parameter	Description
1	Problem Statement	The retail sector often underutilizes valuable product performance data due to a lack of visualization. As a result, it becomes difficult for managers and marketers to assess the impact of pricing, shelf positioning, and consumer behaviour on sales.
2	Idea / Solution Description	This project transforms raw product positioning data into interactive dashboards using Tableau. The solution includes calculated fields (e.g., Price Flag), visual comparisons (Tree Map & Bar Charts), and interactive filters for traffic level, demographics, and shelf position.
3	Novelty / Uniqueness	The dashboard goes beyond basic reporting by offering dynamic filtering, consumer segmentation, pricing comparison, and shelf placement analysis—all in one place, without the need for coding.
4	Social Impact / Customer Satisfaction	The solution helps retail managers, marketing teams, and merchandisers make informed, confident decisions. It improves visibility, optimizes promotions, and helps businesses align product placement with customer behaviour.
5	Business Model (Revenue Model)	This dashboard can be offered as a SaaS product to retail chains, FMCG companies, and analytics teams. Advanced features like auto-recommendations, competitor benchmarking, and promotional ROI tracking can be monetized.
6	Scalability of the Solution	The solution is scalable—it can support larger datasets, more categories, new user roles, and even integrate with live data or ML-based sales forecasting models in the future.

4.3 Solution Architecture

Solution architecture bridges the gap between retail business challenges and data-driven technological solutions. It defines how different components — from data ingestion to visualization — interact seamlessly to deliver valuable insights.

- The architecture separates data preprocessing, visualization, and user interface layers—ensuring modular design, easy maintenance, and future scalability.
- Cleaned data from CSV (or future live sources like MySQL) is enhanced with calculated fields such as Price Flag and Sales Category in Tableau.
- Tableau dashboards provide category-wise, demographic-wise, and traffic-level-based insights with interactive filters for shelf position, price strategy, and promotion.

- Dashboards can be embedded into a Flask-based web application, offering a simple, intuitive portal for retail managers and marketing analysts.
- The system is designed to support future enhancements, including sales forecasting modules, real-time data pipelines, and deployment to platforms like Heroku, AWS, or Tableau Server.



5. Project planning & scheduling

5.1 Project Planning

Sprint	Epic	User Story / Task	Story No.	Points	Priority	Assigned To
Sprint 1	Data Setup	As a user, I can upload product positioning data in CSV format	USN-1	3	High	Siva Satya Trinadh Gorrela
Sprint 1	Data Cleaning	As a developer, I can clean and preprocess the dataset in Tableau	USN-2	4	High	Siva Satya Trinadh Gorrela
Sprint 1	Field Creation	As a user, I can create calculated fields like PriceFlag, SalesCategory	USN-3	2	Medium	Siva Satya Trinadh Gorrela
Sprint 1	Price Binning	As a user, I can create bins for “More Expensive” and “Same Price” products	USN-4	2	Medium	Siva Satya Trinadh Gorrela
Sprint 2	Data Visualization	As a user, I can create Tableau sheets showing sales by price, position, and traffic	USN-5	5	High	Siva Satya Trinadh Gorrela
Sprint 2	Dashboard Creation	As a user, I can build an interactive Tableau dashboard with filters	USN-6	3	High	Siva Satya Trinadh Gorrela
Sprint 2	Dashboard Styling	As a user, I can style the dashboard for better UX and clarity	USN-7	2	Medium	Siva Satya Trinadh Gorrela
Sprint 3	Storytelling	As a user, I can create a Tableau Story to narrate key insights	USN-8	2	Medium	Siva Satya Trinadh Gorrela
Sprint 3	Flask Integration	As a developer, I can embed the dashboard into a Flask web app	USN-9	4	High	Siva Satya Trinadh Gorrela

Sprint	Epic	User Story / Task	Story No.	Points	Priority	Assigned To
Sprint 3	Embed Testing	As a user, I can test and review the embedded dashboard in the Flask app	USN-10	2	Medium	Siva Satya Trinadh Gorrela
Sprint 4	Documentation	As a team, we can prepare final documentation for the project	USN-11	3	High	Siva Satya Trinadh Gorrela
Sprint 4	Demo Preparation	As a team, we can prepare and rehearse a full demo presentation	USN-12	2	Medium	Siva Satya Trinadh Gorrela
Sprint 4	Bug Fixing / QA	As a developer, I can test the system and fix logic/visual bugs	USN-13	2	Medium	Siva Satya Trinadh Gorrela

Project Tracker, Velocity & Burndown Chart

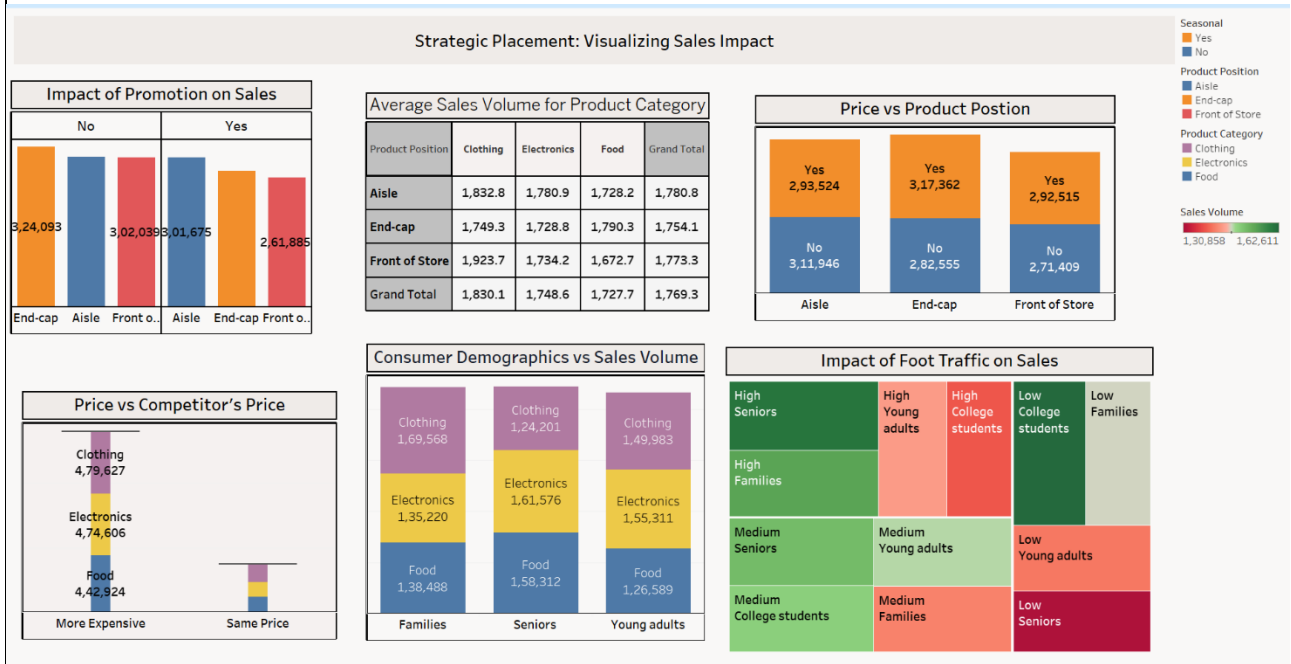
As a solo contributor, I planned and executed the project in four focused phases, covering data setup, dashboard creation, integration, and documentation. All milestones were achieved within the expected timeline.

6Functional and performance testing

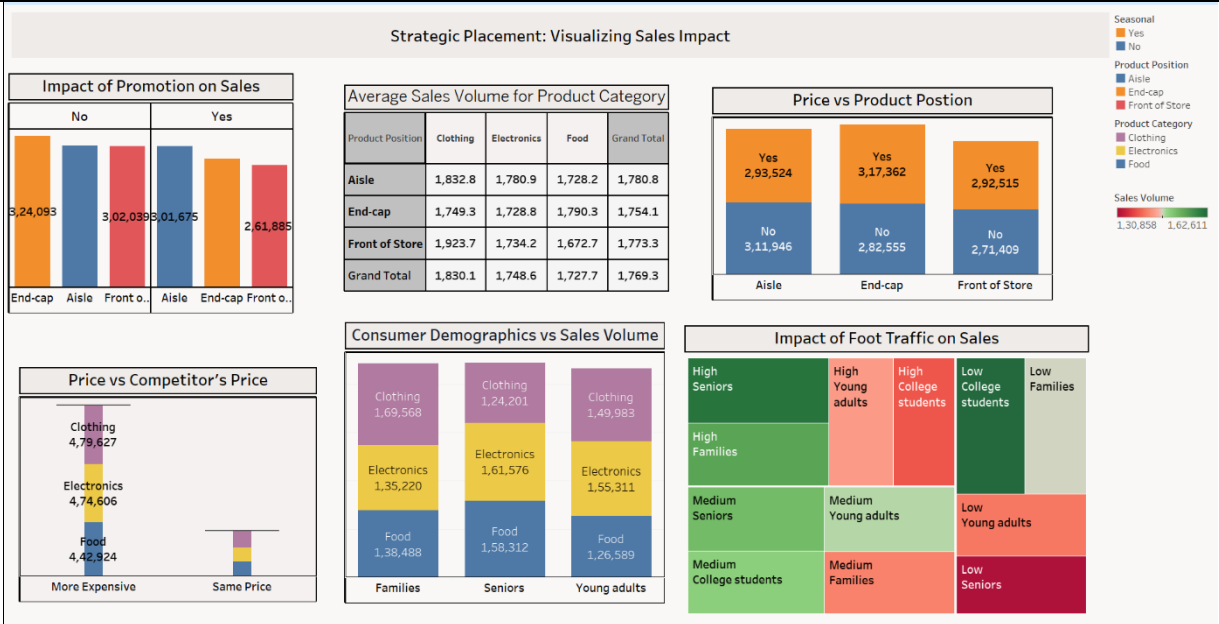
6.1 Performance Testing

S.No	Parameter	Screenshot / Values
1.	Data Rendered	The dataset used includes fields such as Product Category, Shelf Position, Foot Traffic Level, Pricing (More Expensive / Same Price), Promotion Status, Sales Volume, and Consumer Demographics (e.g., College Students, Families, Seniors). The data was provided in .csv format and further enriched with calculated fields for analysis.
2.	Data Preprocessing	<p>Before importing into Tableau, the following preprocessing was performed:</p> <ul style="list-style-type: none"> • Cleaned missing/null values • Standardized column names (e.g., "Promotion Status") • Created calculated fields like Price Flag, Sales Category • Transformed categorical values for better filter usability • Prepared the final dataset for Tableau dashboards
3.	Utilization of Filters	<p>Multiple filters were implemented in Tableau to improve exploration:</p> <ul style="list-style-type: none"> • Product Category • Foot Traffic Level (Low, Medium, High) • Consumer Demographics (Families, Young Adults, etc.) • Shelf Position (Aisle, End-Cap) • Price Comparison (More Expensive / Same Price) • Promotion Status (Yes/No)
4	Calculated Fields Used	<p>The following calculated fields were created in Tableau:</p> <ul style="list-style-type: none"> • PriceFlag → Identifies if product is "More Expensive" or "Same Price" • SalesCategory → Groups sales into bins based on volume • Promotion_YN → Converts "Yes"/"No" to 1/0 for easier filtering • FootTrafficScore → Optional score derived if numeric traffic data available

5 Dashboard



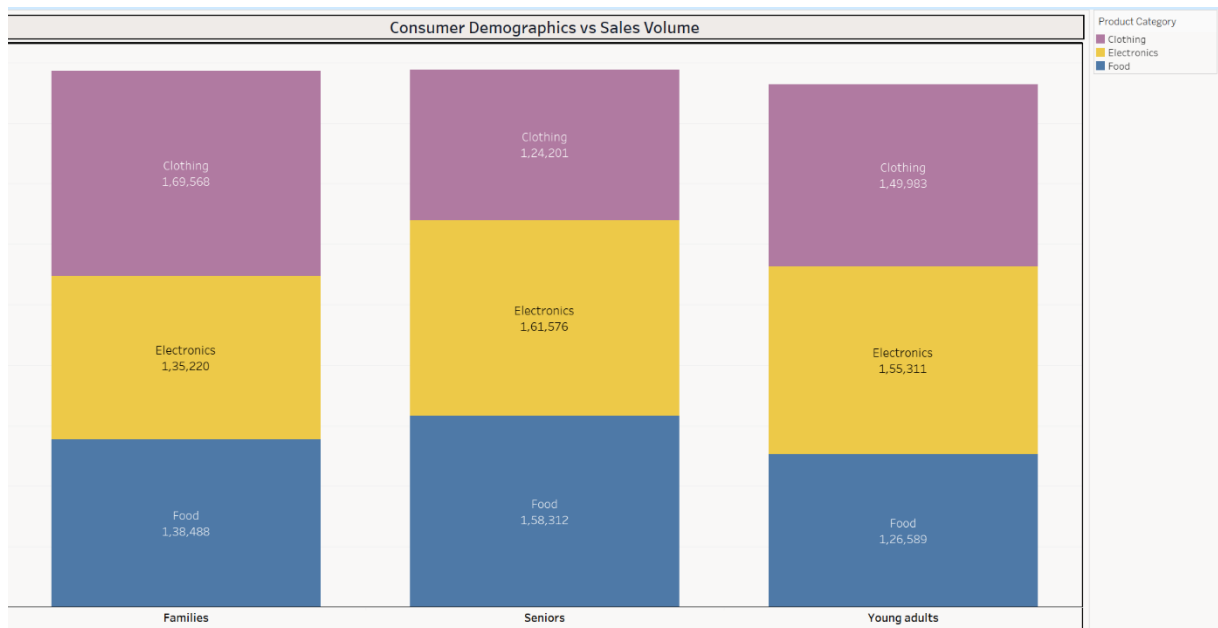
6 Story Design



7. Results

7.1 Output Screenshots

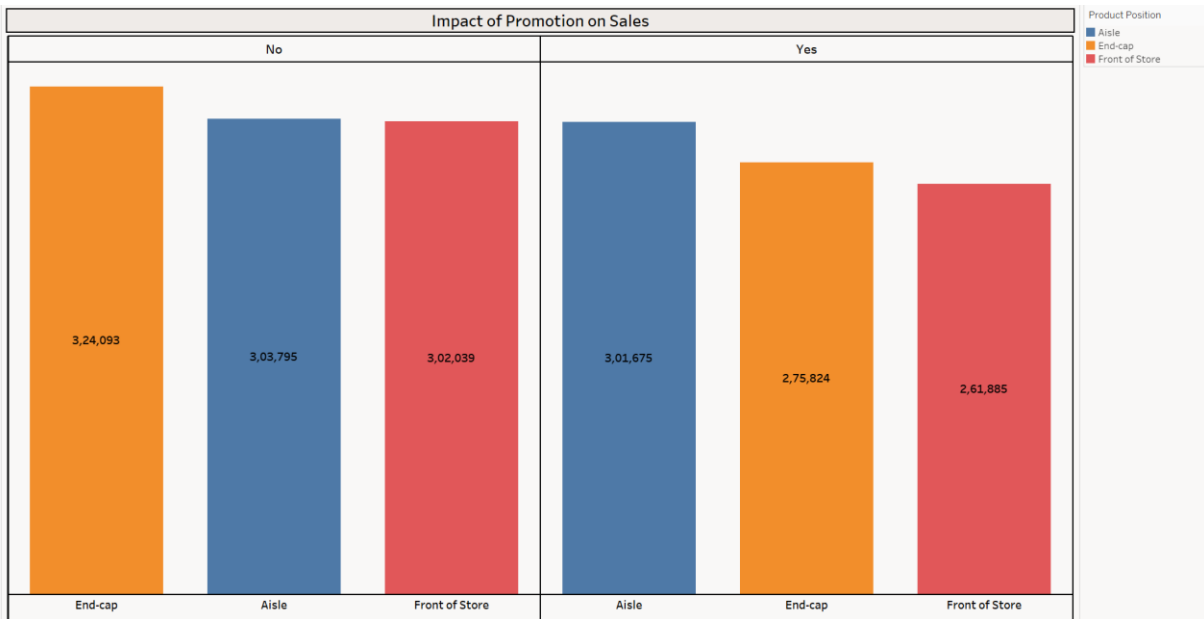
Output of Sheet 1



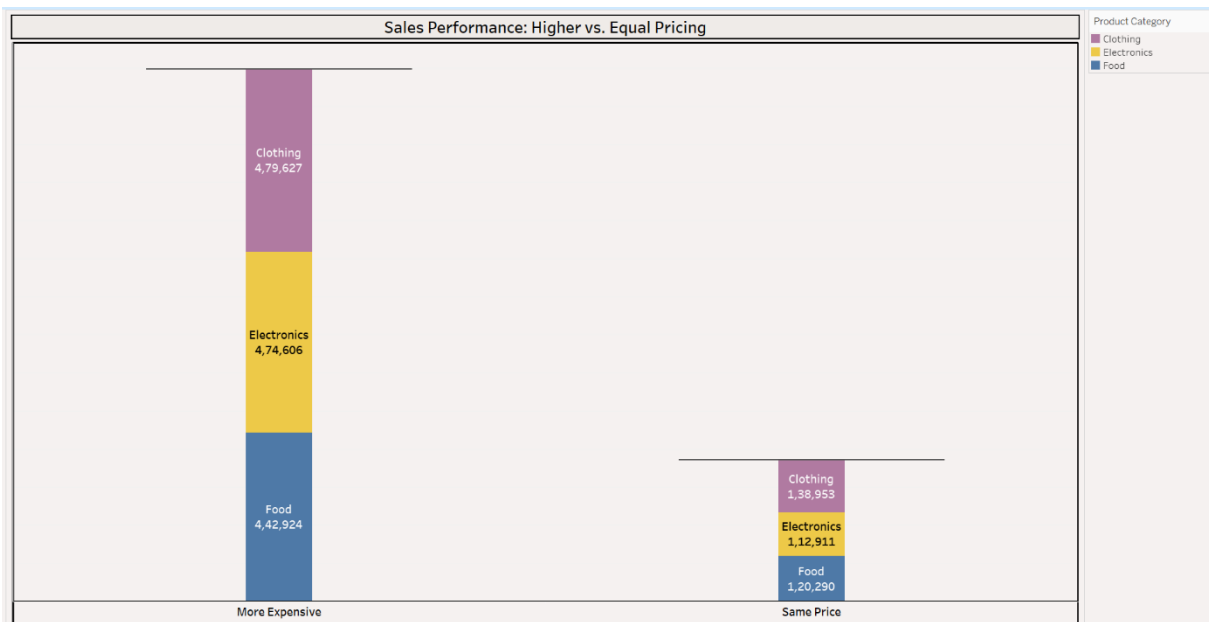
Output of Sheet 2

Sales Distribution Across Categories and Positions					<div>Product Category</div> <div><input checked="" type="checkbox"/> (All)</div> <div><input checked="" type="checkbox"/> Clothing</div> <div><input checked="" type="checkbox"/> Electronics</div> <div><input checked="" type="checkbox"/> Food</div>
Product Position	Clothing	Electronics	Food	Grand Total	
Aisle	1,832.8	1,780.9	1,728.2	1,780.8	
End-cap	1,749.3	1,728.8	1,790.3	1,754.1	
Front of Store	1,923.7	1,734.2	1,672.7	1,773.3	
Grand Total	1,830.1	1,748.6	1,727.7	1,769.3	

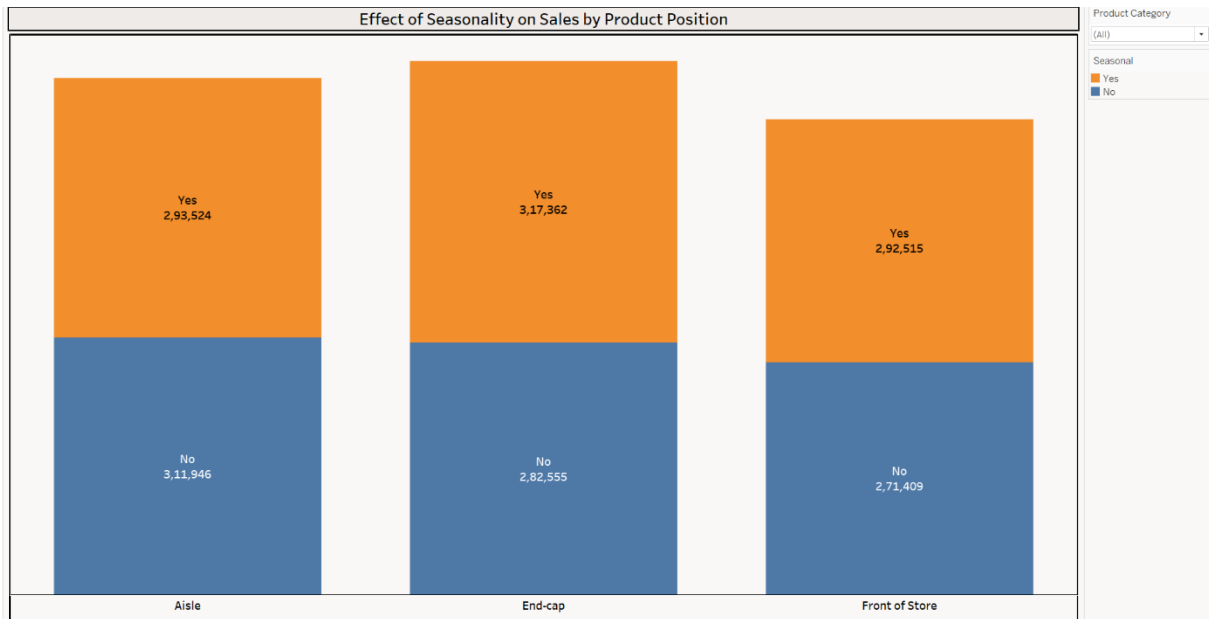
Output of Sheet 3



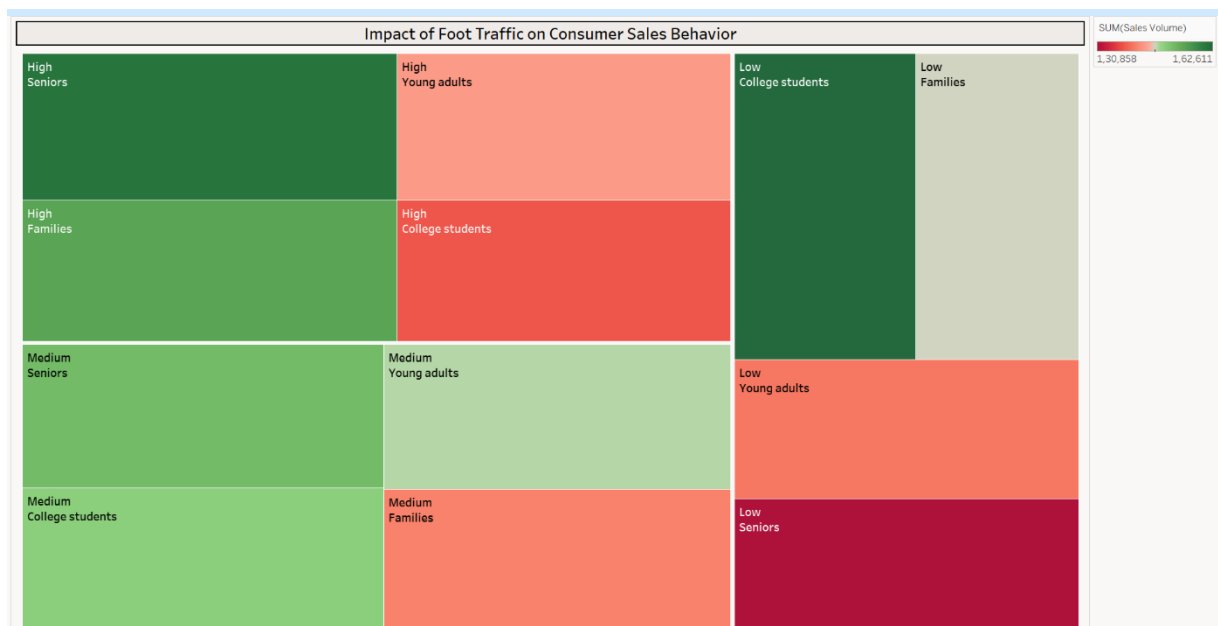
Output of Sheet 4



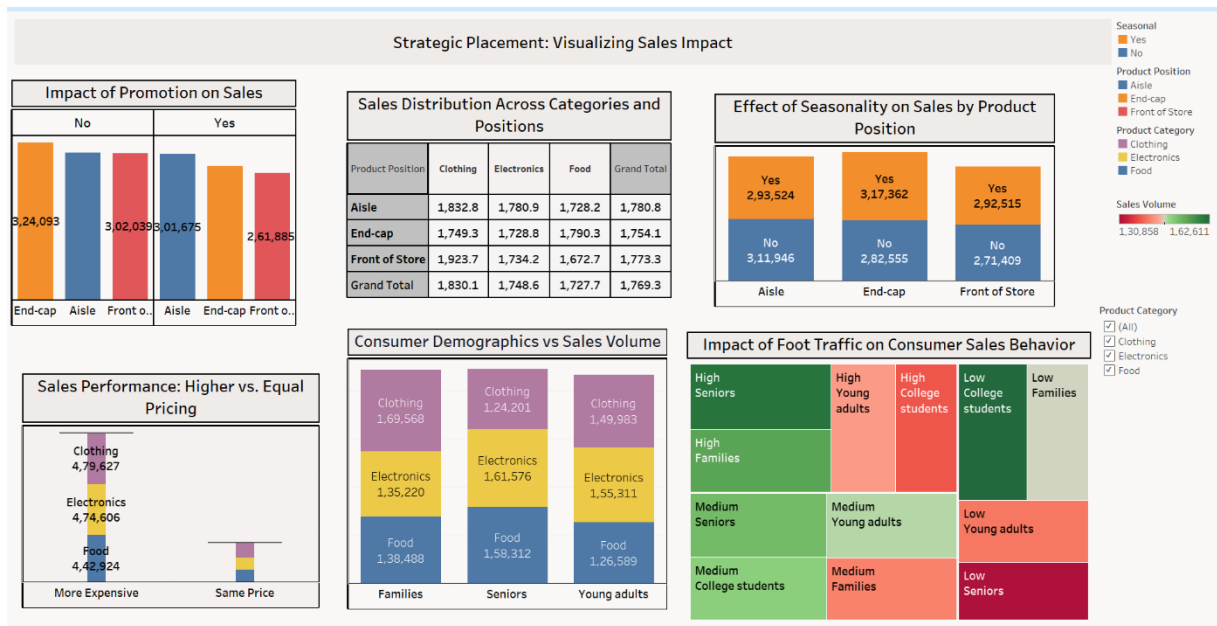
Output of Sheet 5



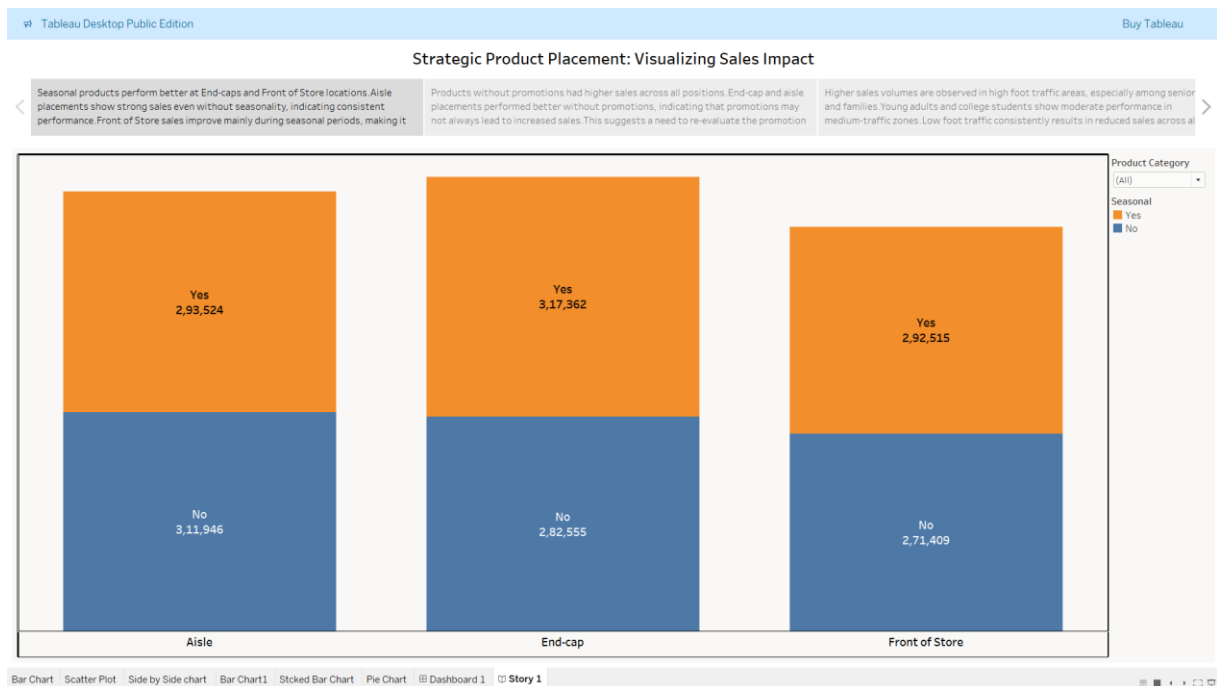
Output of Sheet 6



Output of Dashboard



Output of Story

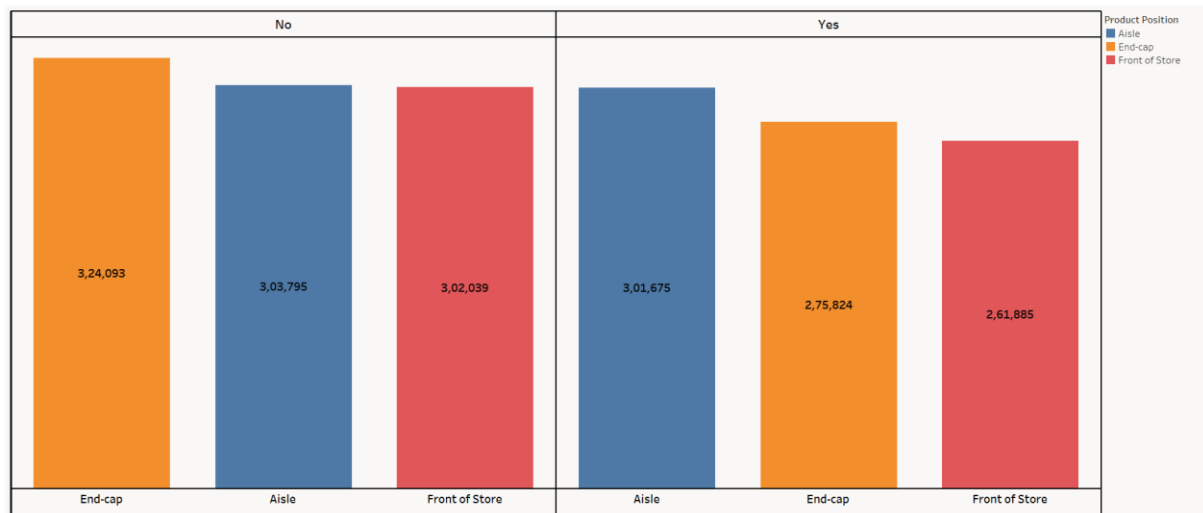


Strategic Product Placement: Visualizing Sales Impact

Seasonal products perform better at End-caps and Front of Store locations. Aisle placements show strong sales even without seasonality, indicating consistent performance. Front of Store sales improve mainly during seasonal periods, making it

Products without promotions had higher sales across all positions. End-cap and aisle placements performed better without promotions, indicating that promotions may not always lead to increased sales. This suggests a need to re-evaluate the promotion

Higher sales volumes are observed in high foot traffic areas, especially among seniors and families. Young adults and college students show moderate performance in medium-traffic zones. Low foot traffic consistently results in reduced sales across all



Bar Chart Scatter Plot Side by Side chart Bar Chart1 Stacked Bar Chart Pie Chart Dashboard 1 Story 1

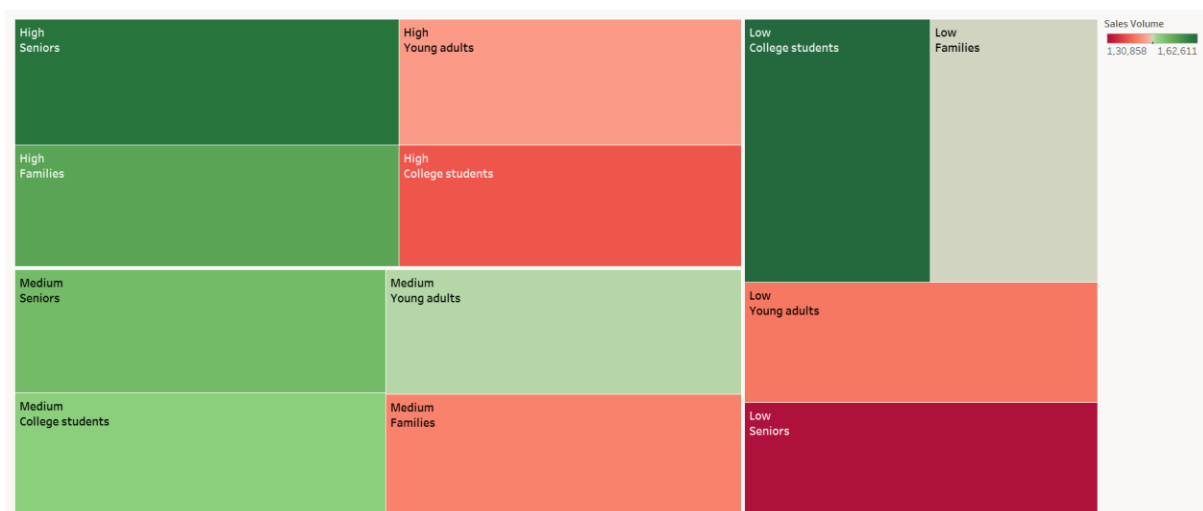
Strategic Product Placement: Visualizing Sales Impact

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Front better similar



Bar Chart Scatter Plot Side by Side chart Bar Chart1 Stacked Bar Chart Pie Chart Dashboard 1 Story 1

Strategic Product Placement: Visualizing Sales Impact

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Front of Store has the highest average sales for Clothing, while End-cap performs better for Food. Aisle placements are strong for Electronics, but all positions show similar performance across categories. This insight helps match product types to the

Families show elect

Product Position	Clothing	Electronics	Food	Grand Total	Product Category <input checked="" type="checkbox"/> (All) <input checked="" type="checkbox"/> Clothing <input checked="" type="checkbox"/> Electronics <input checked="" type="checkbox"/> Food
Aisle	1,832.8	1,780.9	1,728.2	1,780.8	
End-cap	1,749.3	1,728.8	1,790.3	1,754.1	
Front of Store	1,923.7	1,734.2	1,672.7	1,773.3	
Grand Total	1,830.1	1,748.6	1,727.7	1,769.3	

Bar Chart Scatter Plot Side by Side chart Bar Chart1 Stacked Bar Chart Pie Chart Dashboard 1 Story 1

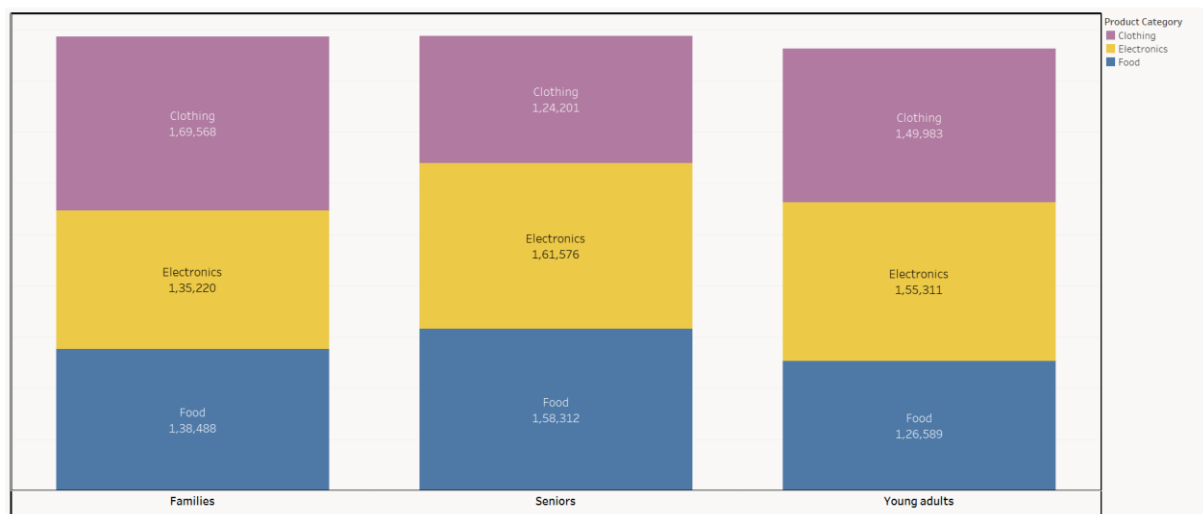
Strategic Product Placement: Visualizing Sales Impact

Higher sales volumes are observed in high foot traffic areas, especially among seniors and families. Young adults and college students show moderate performance in medium-traffic zones. Low foot traffic consistently results in reduced sales across all

Front of Store has the highest average sales for Clothing, while End-cap performs better for Food. Aisle placements are strong for Electronics, but all positions show similar performance across categories. This insight helps match product types to the

Families prefer clothing, while seniors buy more electronics and food. Young adults show a balanced interest across all categories, but have the highest sales in food and electronics. Understanding these preferences helps retailers customize marketing and

Surpr more brand



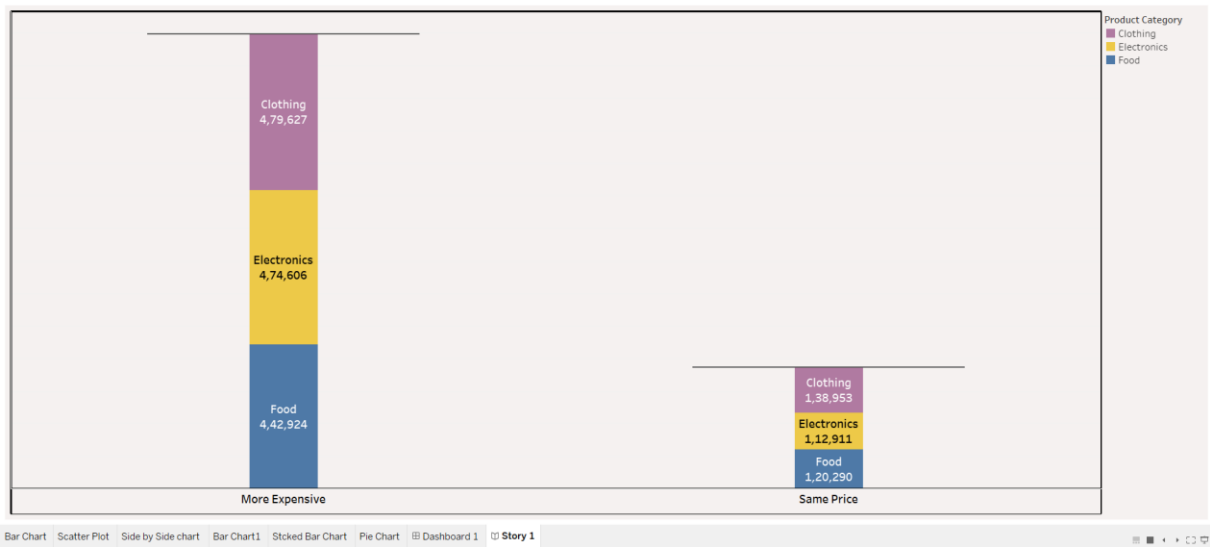
Bar Chart Scatter Plot Side by Side chart Bar Chart1 Stacked Bar Chart Pie Chart Dashboard 1 Story 1

Strategic Product Placement: Visualizing Sales Impact

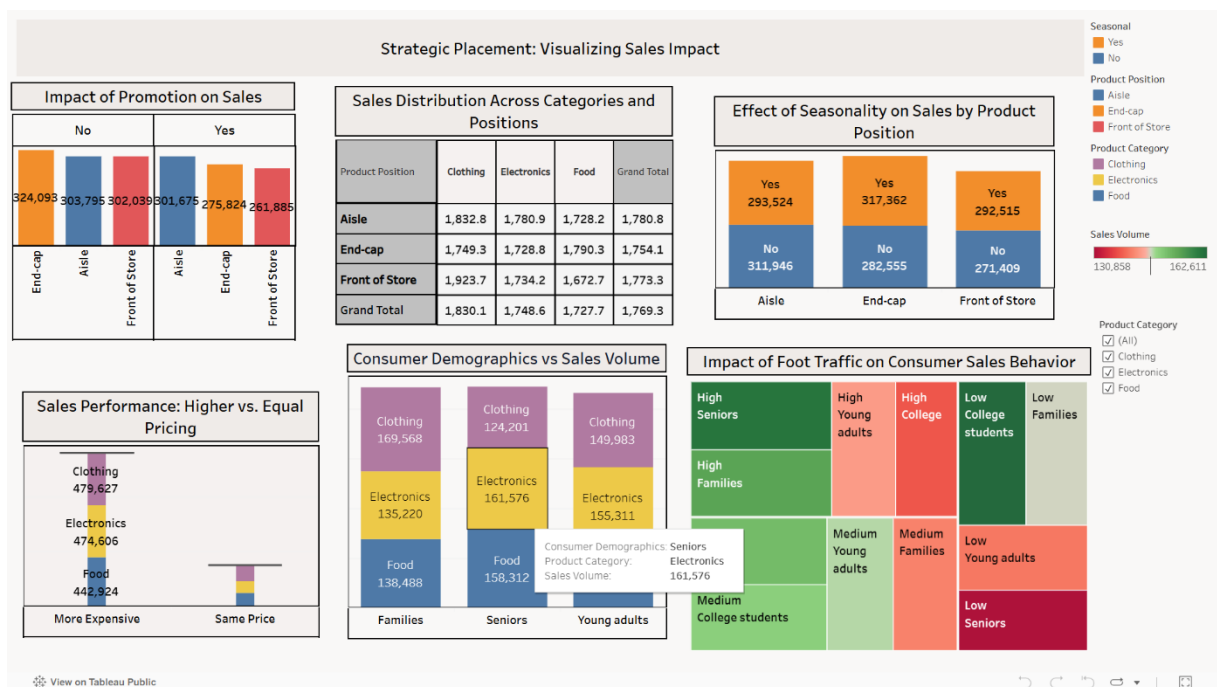
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Families prefer clothing, while seniors buy more electronics and food. Young adults show a balanced interest across all categories, but have the highest sales in food and electronics. Understanding these preferences helps retailers customize marketing and

Surprisingly, products priced higher than competitors still generated significantly more sales, especially in clothing and electronics categories. This indicates strong brand value or strategic positioning that offsets the effect of higher pricing. Products



Output :



8. Advantages & disadvantages

Advantages:

1. **Interactive Analysis**

The Tableau dashboard allows users to explore sales data dynamically using filters like product category, traffic level, demographics, pricing strategy, and shelf position — enabling deep and intuitive exploration.

2. **Informed Decision-Making**

Retail managers and marketing analysts can make data-driven decisions by identifying which combinations of price, placement, and consumer segment lead to higher sales performance.

3. **Effective Data Storytelling**

Tableau Story helps convey insights step-by-step, making it easier to present findings to non-technical stakeholders or management teams.

4. **Segment & Category Comparison**

Visuals such as Tree Maps and stacked bar charts allow quick comparison across categories, traffic levels, or pricing groups — revealing patterns in consumer behaviour.

5. **Calculated KPIs**

Custom calculated fields like Price Flag, Sales Category, and Promotion help extract deeper insights and enable comparative analysis across retail segments.

6. **No Coding Required**

Most of the visuals and dashboards were built using Tableau's drag-and-drop features — making the project accessible even to users without programming experience.

7. **Scalable & Modular Design**

The solution is built with scalability in mind. It can accommodate more product categories, new datasets, or integration with forecasting modules in the future.

8. **Web-Based Accessibility (Optional)**

The dashboard can be embedded in a Flask-based web app for wider internal use, eliminating the need for Tableau Desktop among viewers.

Disadvantages:

1. Static Dataset Limitation

The dashboard currently uses a static .csv file. For real-time insights, it would require integration with a live data source like a database or API.

2. Tool Dependency (Tableau Public)

As the project uses Tableau Public, there are limitations such as public visibility of dashboards and lack of row-level security.

3. Basic Descriptive Analytics Only

This project focuses on visualization and pattern recognition — it does not include machine learning or predictive modelling capabilities.

4. Manual Preprocessing

Data cleaning, renaming, and field creation were done manually in Tableau or Excel, which may not be scalable for larger or continuously updated datasets.

5. Learning Curve for New Users

While Tableau is user-friendly, creating calculated fields or using complex filters might require initial learning for beginners.

6. Limited Device Optimization

On small screens or older browsers, some dashboards may not display optimally unless specifically designed for responsiveness.

9. Conclusion:

The project "Visualizing Product Positioning and Consumer Behaviour Using Tableau" successfully demonstrates how retail sales data can be transformed into interactive and actionable insights. By leveraging Tableau's powerful visual analytics, we have enabled retail managers, marketers, and analysts to explore how product category, shelf position, pricing strategy, foot traffic, and demographics influence sales performance. The dashboards allow users to filter and compare performance across multiple variables, making it easier to identify high-performing segments and optimize shelf layouts and promotional efforts. The project bridges the gap between raw sales data and strategic retail decision-making by offering a no-code, visual interface that promotes clarity and insight. Overall, this solution enhances retail operations by aligning data visualization with business goals empowering stakeholders to make smarter, data-driven decisions with minimal technical complexity.

10. Future scope:

1. Live Data Integration

Future iterations of this project can connect to real-time sales systems or inventory databases via APIs, enabling dynamic updates and current product performance tracking.

2. Machine Learning Forecasting

Incorporating regression or classification models can help predict future sales based on variables like shelf position, pricing, and traffic — allowing for smarter demand forecasting.

3. **Cross-Channel Retail Analysis**

The dashboard can be expanded to include online vs. offline product performance, enabling businesses to compare omnichannel behavior and optimize cross-platform strategies.

4. **Mobile Optimization**

Enhancements in dashboard design can improve responsiveness, ensuring seamless viewing on mobile devices like tablets and smartphones — useful for on-the-go managers and sales teams.

5. **Advanced Access Control & Permissions**

By deploying the dashboard via Tableau Server or Tableau Online, stakeholders can be given role-based access — ensuring secure data sharing across teams and departments.

6. **Geolocation & Store-Level Analysis**

Integrating geospatial data (e.g., store locations, regional traffic heatmaps) can provide more granular insights into where product performance is strongest or weakest geographically.

7. **Product Placement Recommendation Engine**

A future version could include a simple recommendation system that, based on sales data and filters, suggests optimal shelf positions or pricing strategies to boost product visibility and sales.

11. Appendix

Source Code: index.html

```
<!-- templates/index.html -->
<!DOCTYPE html>
<html lang="en">
<head>
  <meta charset="UTF-8">
  <title>Product Positioning Dashboard</title>
</head>
<body>
  <h1 style="text-align: center;">Product Positioning Trends Dashboard</h1>

  <div class='tableauPlaceholder' id='vizProductPositioning' style='position: relative'>
    <noscript>
      <a href='#'>
```



```

        <img alt='Product Positioning Dashboard'

src='https://public.tableau.com/static/images/pr/project_17512780133540/Dashboard1
/1_rss.png' style='border: none' />
    </a>
</noscript>
<object class='tableauViz' style='display:none;'>
    <param name='host_url' value='https%3A%2F%2Fpublic.tableau.com%2F' />
    <param name='embed_code_version' value='3' />
    <param name='site_root' value='' />
    <param name='name' value='project_17512780133540/Dashboard1' />
    <param name='tabs' value='no' />
    <param name='toolbar' value='yes' />
    <param name='static_image'
value='https://public.tableau.com/static/images/pr/project_17512780133540/Dashboar
d1/1.png' />
    <param name='animate_transition' value='yes' />
    <param name='display_static_image' value='yes' />
    <param name='display_spinner' value='yes' />
    <param name='display_overlay' value='yes' />
    <param name='display_count' value='yes' />
    <param name='language' value='en-US' />
    <param name='filter' value='publish=yes' />
</object>
</div>

```

```

<script type='text/javascript'>
    var divElement = document.getElementById('vizProductPositioning');
    var vizElement = divElement.getElementsByTagName('object')[0];
    if (divElement.offsetWidth > 800) {
        vizElement.style.minWidth = '420px';
        vizElement.style.maxWidth = '650px';
        vizElement.style.width = '100%';
        vizElement.style.minHeight = '587px';
        vizElement.style.maxHeight = '887px';
    }

```

```

        vizElement.style.height = (divElement.offsetWidth * 0.75) + 'px';
    } else if (divElement.offsetWidth > 500) {
        vizElement.style.minWidth = '420px';
        vizElement.style.maxWidth = '650px';
        vizElement.style.width = '100%';
        vizElement.style.minHeight = '587px';
        vizElement.style.maxHeight = '887px';
        vizElement.style.height = (divElement.offsetWidth * 0.75) + 'px';
    } else {
        vizElement.style.width = '100%';
        vizElement.style.height = '1527px';
    }
    var scriptElement = document.createElement('script');
    scriptElement.src = 'https://public.tableau.com/javascripts/api/viz_v1.js';
    vizElement.parentNode.insertBefore(scriptElement, vizElement);
</script>
</body>
</html>

```

app.py

```
from flask import Flask, render_template
```

```
app = Flask(__name__)
```

```
@app.route('/')
def home():
```

```
    return render_template('index.html')
```

```
if __name__ == '__main__':
```

```
app.run(debug=True)
```

Project Structure

product_positioning_dashboard/

- |— app.py # Flask server that renders the homepage
- |— templates/
 - |— index.html # Web page embedding the Tableau dashboard

Dataset Link

<https://drive.google.com/file/d/1vHDNGw130kbYUPj-wl4640x-cz5349GM/view?usp=sharing>

Tableau public link

https://public.tableau.com/views/project_17512780133540/Dashboard1?:language=en-US&:sid=&:redirect=auth&:display_count=n&:origin=viz_share_link